AMERICAN
JOURNAL OF SURGERY

VOL. XXVII. AUGUST, 1913. NO. 8

ACCURACY AND BREVITY IN OFFICE CASE RECORDS.*

VICTOR COX PEDERSEN, A.M., M.D.,
New York.

The principle on which the following method of case records is founded is that of plotting the curve of efficiency, for example, in engineering work. It is manifest that one may not evolve a scheme by which the course of all symptoms may be charted as one charts temperature, pulse and respiration, but it is possible, with the aid of signs and symbols, to record the variations in the disease and the changes in treatment on single lines devoted to each important detail.

No signs may be found better than those used in algebra variously modified and adapted to the purpose, inasmuch as they not only express the meaning with definiteness and elasticity but also are comprehensible universally.

The key, therefore, of these charts, may be regarded as self-evident or might be printed across the top of each sheet in one or two lines:

Positive ±	Distinctly weak +>
Strongly positive ++	Very weak +>>
Very strongly positive +++	Unchanged =
Extreme ++++	Variable
Absent 0	Decreasing
Doubtful ?	Increasing
Weak ∓	Stopped #

The history sheets are of ordinary letterhead size, 8½ x 11, with the following features shown in the subjoined diagrams. In the original charts the lines are faint blue and faint red so that the eye is not tried as much as it is in the black heavy lines of the diagrams which were drawn in for the purpose of photography.

The name is written in the upper left-hand corner and the diagnosis opposite this. The dates of visitation and treatment come next across the page, each date standing at the top of a column ⅜ of an inch wide and each month standing over the first visit therein so that it is understood to apply to all the following dates until the name of another month appears. The number of date columns is such that 18 visits may ordinarily be recorded on a single sheet, which, in many cases, covers a long period of time.

The symptom column occupies the extreme left of the page from the top downward to about the halfway point, while the treatment column begins at the bottom of the page in the same space as the symptoms and extends upward. It is very rare indeed that both fill this column up completely, which contains 25 lines ⅜ of an inch apart, which is usually spaced for two items between each pair of lines so that in all it is possible to make about fifty entries in the symptom-treatment column.

Symptoms are usually written first, rather prominently, and under each come the treatment applied at home by the patient. The course of the symptoms is set down in the line opposite each by algebraic signs as stated above, while the changes in the medication are inserted on the line opposite each. Thus it is possible by running the eye along the various lines from left to right to read off the variations from visit to visit in the symptoms, complications and treatment.

Where a new symptom or complication arises its title and treatment are entered in the proper column at the left with all other items of this class but the date of its occurrence is noted in the column for dates on the day of its first appearance. The following charts show these points well. It follows from this arrrangement, therefore, that it is not only possible to read the course of symptoms and treatments on single lines from left to right but also feasible to read the entire condition of the patient and details of his care on a single date from above downward in the column of that date.

Chart 1 is that for acute urethritis and shows in the upper section the common, acute symptoms and their ordinary management. The course of scalding for example is set forth during the dates from March 1 to 19, inclusive, in a single line, while its treatment with the bicarbonate of soda is on the next line, varying from 10 to 20 and back to 10 grains with the symptom and continued at the last dose for the rest of the chart. The decrease of the discharge from a very marked degree to a drop occurs on the next line between the dates March 1 and April 13, while the hand injection was begun

*Read before the American Urological Association, Boston, Mass., April 15th, 16th and 17th, 1913.

March 16 and stopped April 2, when the signs of posterior urethritis were positive and the incident of left epididymo-orchitis was suggested.

The inspection of the urine is at the bottom of the page and shows only those conditions which obtain in acute gonococcal urethritis—namely, considerable uncertainty in control of the bladder and pus.

In the section of the chart above that set apart for the examination of the urine are several spaces devoted to the treatment of chronic gonococcal urethritis, which are necessarily blank in an acute case, as is here illustrated. Were the reverse conditions present the section at the top of the chart would be nearly blank, while these lines would be filled with signs.

The middle section of the page is usually blank and adapted to complications, as is shown in Chart 1 by balanoposthitis and epididymo-orchitis. The former running its course from March 1 to 10 and the latter beginning April 5 and continuing on to the next sheet of this history with its treatment of strapping and aconite.

If we desire to see the condition of the patient and his treatment on say April 5 we would note that he is taking bicarbonate of soda as a simple alkali, the discharge is very little, the posterior urethritis marked with 20 diurnal and 5 nocturnal urinations, poor control, great urgency, great tenesmus, treated by sitting baths and rectal irrigations. Also that the left epididymo-orchitis is positive and being treated with strapping and aconite and that the first and second glasses contain pus and that the retention of urine at the time of his visit is only a quarter hour.

Chart 2 is a case of syphilis in the secondary stage. The course and treatment of the chancre, eruption and mucous patches are in the light of the preceding description of Chart 1 so clearly set forth as to need no further comment. In the lowest segment of the chart is the office treatment, showing an intravenous injection of salvarsan on July 13, 1912 and the injections of mercury salicylate into the regions of the buttocks previously described by me in the *Medical Record*, 1905, and the *New York State Medical Journal*, March, 1909.

The middle section of the chart is devoted to the details of the patient's condition and shows the variations in the weight from the normal, 160 pounds for this patient; also the changes in his general condition with primary depression and subsequent improvement. The serodiagnosis is also noted from ++ to + and finally +>. The anemia varied between 90%, 80% and 85% and the urine was taken for analysis July 1, August 3 and 31. The condition of the patient on, say August 3, was induration of chancre positive with mercurial ointment as treatment, eruption faint or doubtful, black wash (B.W.) is being applied as the mouth wash, weight 150 pounds, general condition fair, blood test positive, and uranalysis done and salicylate of mercury 1 grain administered.

Chart 3 is a case of chancroid and bubo and may readily be interpreted in the light of the foregoing explanations.

Chart 4 is blank and available for the purposes of cases which vary so widely that printed data are impossible; in fact, to many, Chart 4 might be the most attractive in that the practitioner may insert his entries in any method appealing to him. It would, at any rate, be especially suitable for cases of renal, ureteral, vesical and genital disease having scarcely two cases much alike.

Chart 5 is available for uranalysis records. It requires, in addition to the foregoing key of algebraic signs, a set of abbreviations:

Clear=cl.	Acid=ac.
Turbid=tb.	Alkaline=alk.
Bloody=bdy.	Neutral=neut.
Pussy=pus.	Yellowy=y.
Red=r.	Orange=o.
Urinous=urn.	Fragrant=fgt.
	Foul=foul.

It will be noted that not only may the curve or variations in a given element in the urine be entered and read off from left to right on the same line, but also may the character of the specimen on a given date be noted from above downward in one column. It will be seen that this chart states not only the physical, chemical, microscopical and bacteriological features of the urine but also the usual tests involved. This is not necessary and will not be included in my next series of charts. They were originally inserted in order to permit accurate comparative study of uranalysis reports in long and difficult cases. The entries in this chart are those of a case of syphilitic nephritis in a physician, innocently infected during a confinement case. All the methods of entry are the same as in the foregoing charts and therefore need no further notice.

Chart 6 is called the urination chart but could be applied to other prominent symptoms if desired. A glance will reveal its application. It is ruled into six primary columns at the top of each of which the date is written or the beginning and the ending of each 24-hour interval. The primary columns are subdivided into two secondary columns, the left of which is headed by the word "hour" and the right

Chart 1

JOHN JONES — Ac. Gonoc. Ant-Post. Urethritis.

Dates of Visits	MARCH 1913										April						
	1	4	7	10	13	16	19	22	25	28	1	2	3	6	7	10	13	16
Scalding	++	+	+>	=	=>	±	0											
U. Diluent Na	10	15	20	•	•	•	10	•	•	•	•	•	•	•	•	•	•	•
Discharge Hand Inj.	+++	=	=	++	=	=	=>	+	+	=	+>	+7	±	=	=	=	drop	=
						10%	Argt	•	•	•	•	∮						
Chordee Dressing		+	+	+	>?	±	0											
	Cold Comp.	•	•	•	•	•	∮											
Sedative Ac. Urethritis	Aconite	•	•	•	•	•	∮											
										?								
D. U. times									Card	10	20	=	=	12	8	5		
N. U. times										2	5	=	=	3	2	0		
Control Urgency										+	±	=	=<	+?	+	++	=	
											++	=	=	+	+?	+	0	
Tenesmus Blood											?	++	=	+>	>?	±	0	
Sedatives Sitz Baths											•	•	•	•	•	•	•	∮
Rectal Irrig.												•	•	•	∮			
Complications																		
Bal. Posth Dress.	+	+>	±	0														
	•	•	•	∮														
$AgNO_3$ Epi-Orch Strap.	2%	•	•	∮							?	Left	+	+	+	-	-	
													•	•	•	•	•	•
Accnite													•	•	•	•	•	•
V. C. Pedersen's Ointment Sd																		
Urethroscopy																		
V. C. Pedersen's Irrigating Sd.																		
Kohlman Vesical Irrig																		
Massage P																		
Hagar Instill																		
Retrojection Straight Sd																		
Catheter Instill Urethral Irrig																		
Examinations of Urine: Reaction U	1	1	1	1	1	1	1	1	1	1	1/2	1/4	1/4	1/2	1	1	2	
Retent. U	1-2	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	
Pus Phosphates																		
Carbonates Blood																		
Pus Shreds Mucous "																		

Chart 2.

SAMUEL SMITH — Syphilis II

Dates of Visits	JULY 1913											AUGUST								
	1	4	7	10	13	16	19	22	25	28	31	3	6	11	16	21	26	31
Chancre Phimosis	+	+	=	=	+?	=	=	>?	=	±	∮	Ind	+	=	=	=	>	=
Discharge Irrigation																		
Stimulation Dressing	Unct. Hg	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Phagedena Antiseptic																		
Adenitis Dressing																		
Eruption Salve	+	++	=	=	=	>	+	+?	=	=	>?	=	±	=	?	∮		
Patches Caustic	+	=	=	=	>	>	=	±	∮									
	$AgNO_3$ 10%	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Wash Condylomata	B. W.																	
Dressing Alopecia																		
Salve Headache																		
Sedative Gumma																		
Stimulation Dressing																		
Weight (160)	155	150										155					153	
In Clothes																		
General Condition	+	=	=	=	=	=	=	=	=	=	=	=	=	=	=	∮		
Serodiag. Anemia R B	++ 90%			80%									+				85%	
Urine	•												•				•	
606 Intrav. Internal	•			0.6														
Alternatives Inunction Fumigation Injection	Salicylate Mercury																	
R U 1"	1/2															1/2		
L U 1"		1/2															1/2	
R U 3"			1															
L U 3"				1														
R U 5"								1										
L U 5"									1									
R L 1"										1/2								
L L 1"											1/2							
R L 3"												1						
L L 3"													1					
R L 5"														1				
L L 5"														1				

Chart 3.

JOHN SMITH — Chancroid-Bubo

Dates of Visits	MAY 1913															JUNE	
	1	2	3	5	6	7	8	10	12	14	16	19	23	27	1	6	
Chancroid	+	+	+	>	+>?	=	=	±	=	∮							
Chancre Excision Ligation	•														—		
Dressing Irrigation	B.W.	•	•	•	•	•	R.W.	•	•								
Powder Salve																	
Pain	+																
Discharge	+																
Antemict Extension	+																
Complications																	
Rule R Iodin	+	+?	++	<.	+++												
Op.					•												
Irons.					•	•	•	•	•	•	•	•	•	•	∮		

Chart 4.

Chart 5.

Name .

Casual Spec.		Calcium Oxalate Crystals	
24 Hour Spec.			
Physical Analysis		Acid Urine	
Quantity		Uric Acid	
Color		Urates	
Odor		Oxalates	
Reaction		Phosphates	
Spec. Grav.		Hippuric A.	
Chem Analysis		Leucin & Tyrosin	
Chlorides		Cystin	
Ag. NO_3		Bilirubin	
Phosphates		Alkaline Urine	
Acetic Acid		Tri. Phosphates	
Carbonates		Calc. Phosphates	
Acetic Acid		Bas. Mag. Phosp.	
Sulphates		Gran. Phosphate	
		Ammonium Urate	
Urea		Calc. Carbonate	
Bromids-Soda		Casts	
Uric Acid		Hyaline	
Nitrazide		Waxy	
Indican		Granular	
Hcl-KClO$_3$		Epithelial	
Acetone		Pus	
Odor		Blood	
Iodoform		Cylind. Urates	
Glucose		Cylind. Bacteria	
Fehling		Bacteriology	
Phenyl-hydrazin			
Quantity			
Bile			
Iodine			
Fuming HNO_3			
Diazo-reaction			
Albuminuria			
Boiling Acetic A.			
HNO_3			
K-ferro-cyan			
Trichloracetic			
Quantity			
Serum Albumen			
NaO H 2			
Serum Globulin			
Mag-Sulph			
Albumosuria			
Urinary Sediments			
Urates			
Phosphates			
Turbidity			
Chyle			

Chart 7.
GONOCOCCAL URETHRITIS.

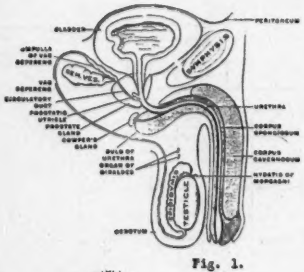

Fig. 1.

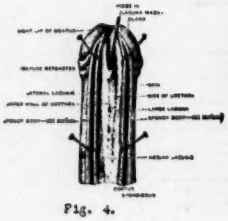

Fig. 4.

Fig. 2.

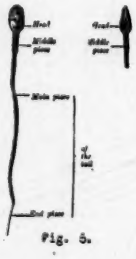

Fig. 5.

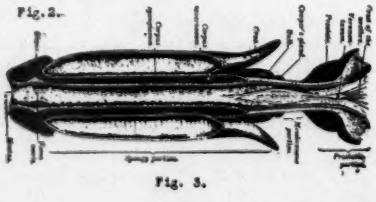

Fig. 3.

Chart 6.

Vesical Cancer

OFFICE OF DR. VICTOR C. PEDERSEN
49 WEST 9TH STREET. TELEPHONE 2139 GRAMERCY.

URINATION CHART OF Peter Simmons. BEGINNING May 1, 1911.

HOUR	NOTES	HOUR	NOTES	HOUR	NOTES	HOUR	NOTES	HOUR	NOTES	HOUR	NOTES
May 1	1911	First	24 hours.					May 2,	1911	2nd 24 hrs	
1P.M.	pain	7 P.M.		4:30		12:45		1:30			
1:30		8	pus	5:10				2:10			
1:45	pain	8:30	pain	6	pus			2:30			
2:10		9:00	stop	7	tenes			3	pain		
3	pus	9:20		7:15	blood			4:05			
3:15		9:30		7:30				4:55	blood		
3:30		10		8				etc.	etc.		
4	blood	11		8:30							
4:20		11:45		9							
5		12:40		9:40							
5:10		1		10:15							
5:45		2		10:45							
6		3		11	pain						
6:20		3:40		12M	pus						
6:35	blood	4			blood						

Chart 8.
COMPLICATIONS OF GONORRHEA

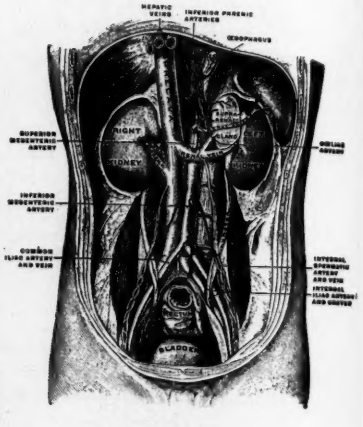

Fig. 1.

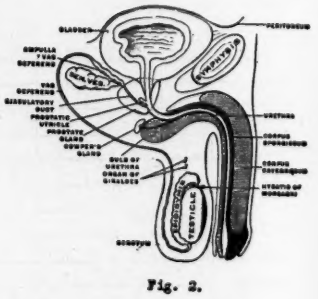

Fig. 2.

by the word "notes." The patient therefore enters in the card the approximate time of the symptom or urination and any special features and thus is able to bring to the office a report free from guesswork and error. The diagnosis is never entered in this card as shown in the figure until after its surrender by the patient.

Cognate and consonant with accuracy and brevity in office records are clearness and definiteness of explanations to patients concerning the main features

of their anatomy as effected by urogenital conditions. Through the courtesy of Messrs. Lea and Febiger I am permitted to show the following anatomical drawings taken from their works and very available for these purposes.

Chart No. 7 relates to gonococcal urethritis. Its Fig. 1 is a diagram permitting one to plot any ordinary lesion with little chance of failure of comprehension by the patient, which is further aided by Fig. 2 showing the organs in situ. Figs. 3 and 4 exemplify the complexity of the mucous membrane and its tendency to invite penetration of the gonococcus. Fig. 5 needs no explanation and meets a number of needs not infrequently in both sexes.

Chart 8 teaches the complications of gonorrhea. Its Fig. 1 presents the hydraulics of stricture of the urethra upon the entire urinary tract behind it, up to and including the kidney. Fig. 2 allows one to show exactly where the stricture is located and Fig. 3 the pathological results of an extreme case.

Chart 9 continues the same topic and with Figs. 2, 3 and 4 shows varieties of form, situation, closure and results of stricture. The value of its Fig. 1 is self-evident.

Chart No. 10 is devoted to hydrocele and varicocele. Its Fig. 1 diagrams the venous plexis affected by varicocele. Figs. 2 and 3 show the sac laid open and Figs. 4 and 5 distended with fluid when involved with hydrocele of the testicle. Fig. 6 outlines the complicated structure of this organ and is serviceable in demonstrating the ease with which disease processes damage it.

Chart 11 deals with the kidney. Its Figs. 1 and 2 develop the topography and the reason why pain in the back is usually below the kidney zone. Fig. 3 shows the relations of kidney, ureter and bladder and Fig. 4 some of the internal structure of the kidney.

Chart 12 concerns the prostate and seminal vesicles. Its Fig. 1 reveals the relations of these structures to each other, the bladder and the rectum and their accessibility to treatment through the latter. Fig. 2 shows the base of the bladder with these structures *in situ*; while Figs. 3 and 4 show dissections of the ampulla of the vas deferens and seminal vesicle and the ejaculatory duct as it passes through the prostate to the colliculus. This particular chart

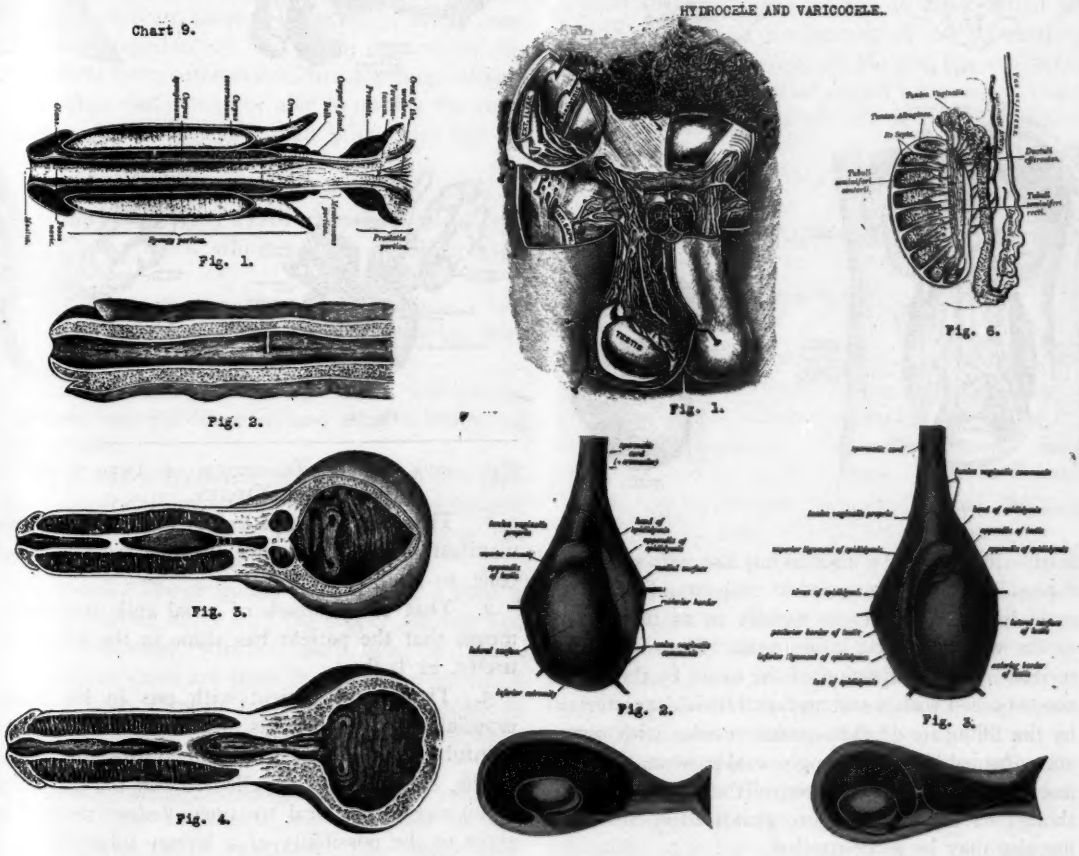

Chart 11.
KIDNEY

NAME_____ DATE_____ 19.

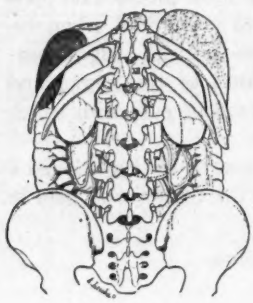

Fig. 1.

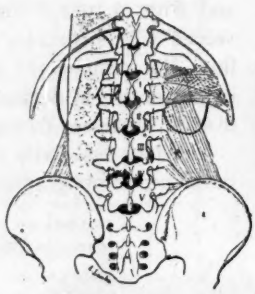

Fig. 2.

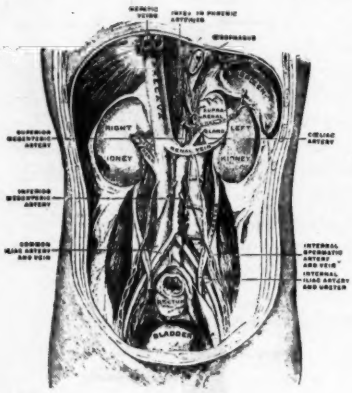

Fig. 3.

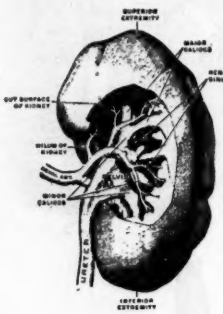

Fig. 4.

is of value not only with men but also with women—especially those who cannot understand why the male has a sexual cycle usually in as many days as the woman's cycle is in weeks. Hers is characterized by the production of the ovum by the ovary, accompanied with menstruation. His is characterized by the filling up of the seminal vesicles with semen accompanied by very strong sexual passion. Neither sex can, by act of will, control these processes, although of course, the mere gratification of sexual impulse may be so controlled.

The use of the record charts after a little familiarity and practice is most convenient and facile and the application of the anatomical diagrams can hardly be improved for the purpose. The writer feels reasonably certain that every one adopting the same plan will be equally as well pleased.

45 West Ninth Street.

Ulcers whose bases are adherent to unyielding deep structures, e. g., those over the inner surface of the tibia, do not heal readily because the base cannot contract in the usual way—undercut.—Bernays' Golden Rules of Surgery.

Chart 12.
PROSTATE AND SEMINAL VESICLES.

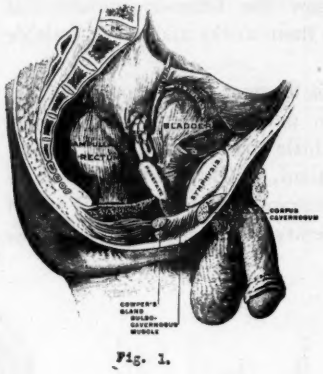

Fig. 1.

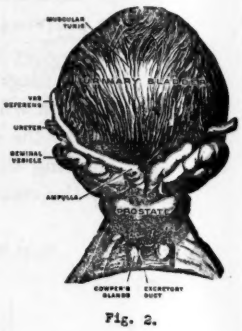

Fig. 2.

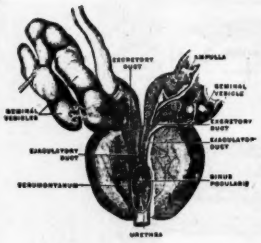

Fig. 3.

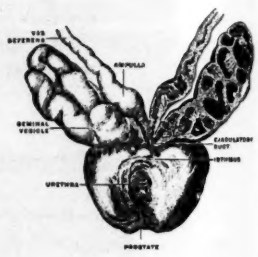

Fig. 4.

FALLACIES IN THE DIAGNOSIS OF INFECTIONS OF THE KIDNEY.

1. That every case of kidney and ureteral stone manifests its presence clinically by a typically renal colic, so familiar to all.

2. That every attack of renal colic necessarily means that the patient has stone in the kidney or ureter, or both.

3. That every patient with pus in his urine, especially if he also has increased frequency or painful urination, must have a cystitis, deep urethritis, etc. He is compelled to run the gamut of every method of local treatment before thought is given to the possibility of a kidney tuberculosis.

4. That when a patient has a fever, of whatever type, be it continuous, remittent or intermittent, if typhoid or malaria are not diagnosed or eliminated, the case is so often set down as one of "obscure fever" or auto-intoxication, or what not. In some of these cases the absence of any localizing kidney signs will, I grant, tax the ability of the most skilled diagnostician. A careful examination of the blood will soon eliminate the presence of malaria or typhoid, but the possibility of such "obscure fever" being of renal origin is seldom thought of.—D. N. EISENDRATH in *The Journal of the Indiana State Medical Association.*

A BRIEF SURVEY OF THE PROGNOSIS AND TREATMENT OF CONGENITAL AND ACQUIRED DILATATION OF THE COLON.

LEWIS J. FRIEDMAN, M.D.,
First Assistant House Surgeon, Volunteer Hospital, New York City.

In offering suggestions for the treatment of this malady, which I have gathered from a multitude of sources, I am bound to conclude from the investigations made that they are far from complete and are still crude. It is of interest to note that most authorities advocate surgical intervention in the treatment of dilatation of the colon, particularly the congenital form, often called Hirschsprung's disease.

In order that I may be able to outline the treatment comprehensively, I shall briefly describe the forms of colon dilatation.

Concetti, in Gold's American Year Book of Medicine and Surgery (1901), describes the following three varieties, which agree with the present nomenclature:

(1) Makrocolie, (*makros*, long) which is a simple elongation of the colon with no deviation from the normal circumference of the bowel.

(2) Magalocolie, (*magas*, great), a uniform increase in internal diameter, and relative thickening of the walls.

(3) Ectacolie (*ectatos*, dilated), which is a simple congenital form, with a more or less extensive dilatation of colon with or without hypertrophy and dilatation of adjacent section of bowel.

Prognosis: The prognosis in makrocolie is usually good in selected cases with the proper medical and dietetic treatment, which I shall describe below. The selected cases are those in which the condition has not been allowed to remain long enough to reduce the vitality of the patient, and in which the pathology is amenable to treatment.

In megalocolie and ectacolie the prognosis is usually bad. These conditions will not yield to any form of conservative treatment. The muscle cells hypertrophy, hyperplasia of connective tissue takes place, which encroaches upon the arterioles, constricting their lumen sufficiently to shut off the necessary amount of blood supply to the coats of the colon. Lack of nutriment causes the colon to lose its inherent tonicity and propulsive function, hence, dilatation of gut and stagnation of feces result. The absorption of toxins from the putrefaction of the bowel-contents is a means by which the vitality of these patients is reduced. Treves says that in addition to the above, the patient suffers from the mechanical effects of the distention in the form of dyspnea, palpitation, edema of legs from pressure on the vena cava, etc. The post-operative prognosis in these subjects is not always favorable. Gould has collected 24 cases from the literature before 1901 of which 18 died in childhood and only 3 of the 6 lived to adult life. He cites two other cases, one of which lived to the age of 21 and the other to the age of 50, under the conservative treatment (non-surgical). The authors of the respective cases maintain that the prevention of absorption of toxin was responsible for the longevity of life.

In that set of cases in which adhesions exist around the bowel (not enough to cause actual obstruction), and the development of morbid anatomy in the proximal portion of the gut has not taken place, the prognosis is very good with radical measures. Roux's cases, which will be described below, illustrate this.

Finney states that "the younger the patient the worse the prognosis."

Treatment: According to the indication, the treatment is divided into

(1) Medical or conservative.

(2) Surgical.

The medical treatment as it is recommended by Nothnagel, Holt, Wilcox, Thompson, and others is simply palliative, which frequently ameliorates the condition temporarily. Exceptional results have been reported by some writers. The two cases from Gould's collection, mentioned above, illustrate what could be done with proper treatment.

Wilcox, French and others suggest high colonic enemata of ox-gall, laxatives to keep the bowels open, and antifermentatives to abate distention, as bismuth tetraiodophenolphthaleine (gr. v) with resorcinol (gr. v) or bismuth subgallate and salol, or beta-naphthol-bismuth (gr. v-xv) according to the indication. Restore tonicity of the bowel with strychnine in small doses or physostigmine salicylate (gr. 1/80 t.i.d.). Turpentine stupes may be tried, and later gentle abdominal massage and nux-vomica internally. Combat anemia with iron, cod-liver oil, etc.

Holt maintains that large enemata aggravate the condition.

Nothnagel claims that massage is dangerous, since if the colon be ulcerated, as is the condition in long-standing cases, rupture might result. The diet, too, should be given some consideration. It should consist of the easily digested and assimilated variety. Buttermilk should be a constant part of the daily regimen. The lactic acid bacilli contained in this form of milk more or less inhibits the formation of indol (CHN), which is one of the deleterious products formed in the process of putrefaction.

(2) Surgical treatment: The question arises, which cases are to be operated on and which are not to be? Osler reports several cases under observation none of which was manageable without surgical intervention. In one of his cases the establishment of an artificial anus produced good results.

One of Treves' two cases described in the *Lancet* is of interest, in that an artificial anus in a child 5¾ years old did not relieve the condition. He then removed the descending colon, sigmoid and rectum with marked results.

In the second case, also a child, he removed the transverse and descending colon to the rectum.

A. Lane, in his enthusiasm over Metschnikoffs' maxim that the large bowel simply acts as a reservoir and absorbs toxins, but no food products, extirpates the entire large bowel and inoculates the ileum with the sigmoid. He reports this operation in a woman for the cure of chronic constipation with good results following. The transverse colon was found to be markedly redundant.

Ochsner and Martin agree with Lane in this radical treatment.

In Murphy's Surgical Series, Vol. 2, 1905, is depicted Giordano's case, a 10-year old girl, on which he performed ileorectostomy, with good result. Tapping of the dilated colon was at one time practiced. Peritonitis was usually a very serious complication due to the leaking of the bowel-contents through the gap made by the trocar. Hirschsprung, Martin and others practiced this treatment but very soon abandoned it, and it is now obsolete.

J. C. Bloodgood in Vol 1 of *Medical Clinics,* 1908, reports Neugebauer's two cases of dilation of the colon, in which the transverse and descending colon was resected and anastomosis done.

His own case of giant sigmoid evidenced itself as a volvulus and during 16 years he treated a number of attacks in this patient. For the first two attacks laparotomy was performed and the torsion relieved. The following several exacerbations were relieved by high rectal enemata. Resection of the sigmoid was finally done, with marked improvement in health. The danger of makrocolie of the sigmoid, according to Bloodgood's collection of 20 cases, is gangrene, which condition developed in several of these, with a mortality of 50%. Carré reported a successful resection when the gut was gangrenous.

Clutton reported a case in 1898 of resection of a dilated sigmoid and end-to-end union made by the Murphy button. Operation was successful except that the button remained in situ. About a year later obstruction developed at that point.

An interesting case, especially from the viewpoint of diagnosis, is the one reported by Peter Daniel of London:

Patient M. M., 12 years old, female. Family history negative. Born with an imperforate anus, which was slit and meconium came away. She was constantly constipated after that, resorting to enemas and drugs to produce evacuation. Occasionally no feces were passed for three weeks at a time. When passed, they were large and remarkably free from odor.

Anorexia, emaciation and loss of strength were becoming marked. On least exertion she passed flatus.

Physical examination: Inspection revealed nothing else than a little fullness of the abdomen below the umbilicus. On palpation he found the abdominal muscles relaxed, but in the right hypograstic and iliac regions a hard, non-elastic mass was felt, the size of a tennis ball and slightly tender on deep pressure.

Rectal examination revealed a very hard mass one inch away from the anus, ovoid in shape and about three inches in diameter, which seemed to be situated outside of the rectum, in Douglas's pouch.

A diagnosis of possible ovarian dermoid was made.

Operation: Laparotomy revealed an inverted U-shaped mass continuous with the descending colon and sigmoid. It now became evident that the provisional diagnosis was erroneous. The rectal contents were then milked into the mass and a Doyen's clamp placed below, a strong clamp above, and the rectum was divided. Like measures were taken at the proximal extremity and end-to-end anastimosis was performed.

On the seventh day feces passed naturally. The patient was discharged on the fourth week. The portion resected was 20 inches long and 13 inches in circumference and weighed 6 pounds 3 ounces.

W. J. Mayo resected from the hepatic flexure to the rectum with remarkable result. The part removed measured 27 inches in length and 6 inches in diameter.

Griffith, Treves and Osler have demonstrated that in some cases of dilatation of the colon, a constricting band existed at the distal end of the expanded portion, which they regard as the cause of the morbid distention. Roux of Paris reports two cases of cecal constipation, due to adhesions at right angle of the colon. The constriction *per se,* according to Treves, predisposed to a subsequent dilatation of the cecum and concomitant symptoms. The conditions in these cases did not improve with medical measures, but excellent results followed laparotomy and separation of the adhesions.

From the cited experiences we must naturally conclude that if some of the cases would reach the surgeon when the manifestations of the disease are still early, many of the harassing symptoms

and developing pathology could be obviated. Very encouraging results have been attained surgically in the last decade.

BIBLIOGRAPHY.

ANDERS—Practice of Medicine.
BLOODGOOD, J. C.—Med. Clinics, 1908, Vol. 1, p. 298.
CLUTTEN—Year Book of Treatment, 1898, p. 93.
DA COSTA—Practice of Surgery, p. 1001.
DANIEL, PETER, F.R.C.S., London—Vol. 2, p. 119, 1909.
FRENCH, JAMES McA. M., M.D.—p. 812.
GOULD, G. M., M.D.—American Year Book of Surgery, 1901. J. P. C. Griffith; Concetti.
HOLT—Pediatrics, p. 428.
LANE, W. A., M.S., London—Inter. Clinics, Vol. 5, Series 14.
MARTIN, C. F.—Montreal Med. Journal, Nov. 9, 1897.
MAYO, W. J.—Mayo Clinics, 1905-1909, p. 279.
MURPHY—Surgical Series, Vol. 2, 1905.
OCHSNER, A. J., M.D., L.L.D.—Inter. Clinics, Vol 6, Series 20, p. 121.
OSLER—Practice, p. 532.
ROUX, J. C., Paris—A. M. A. Journal, July 23, 1910, p. 355
THOMPSON, W. G., M.D.—Practice p. 431.
TREVES—Lancet, Jan. 29, 1898.
WILCOX, R. W.—Treatment, p. 456.

THE RADICAL MASTOID OPERATION IN CHILDREN.*

DAVID G. YATES.

Attending Otologist, Children's Hospitals, Randall's Island; Senior Assistant Surgeon, New York Eye and Ear Infirmary, New York City.

The following paper is based in great part on seven years' work in the Children's Hospital on Randall's Island. Many of these children are custodial cases, under continuous observation, so that final results can be accepted with some degree of confidence. This applies particularly to the ultimate functional results. Among the 1,500 children, ranging in age from 3 to 15 years, there is always a considerable number who, in spite of faithful local and constitutional treatment, removal of tonsils and adenoids, and the advantages of an open-air life, suffer from a continual discharge of pus from the ears. Many of these are sent here from other institutions for this reason. Upon the worst of these cases we began operating in a radical way with the idea of eliminating source of infection and annoyance, but not hoping for much in the way of useful hearing. In this particular, however, we were agreeably disappointed, and are now able to show patients five years after operation with dry ears, hearing the conversational voice at ten to fifteen feet, and manifesting at least no deterioration in hearing power below that existing previous to surgical intervention. Some cases are slightly improved. Certain improvements in technic have been worked out, so that as far as cosmetic results are concerned there is, as these cases demonstrate, little to be desired; and in place of a large, triangular meatus, opening into a scaly, irregular cavity, we see a meatus symmetrically and very slightly enlarged beyond the normal, and a smooth canal leading to a fundus partly occupied, in some cases, by a secondary membrane.

Indications. We should have a very definite idea as to the indications for the radical operation. A chronic discharge does not, of itself, call for the procedure. Many children have profuse otorrhea and yet retain good hearing. Except for a large perforation in the drum membrane in the lower posterior quadrant, the auditory apparatus is comparatively sound. These are cases of chronic purulent mastoiditis, and will recover after a simple mastoidectomy. The radical operation is indicated only when we are sure that there is necrosis in both middle ear and mastoid cells, or when the middle ear is so far damaged that it cannot be restored to usefulness even if suppuration should be arrested. A tympanum filled with a matted mass of ossicles and scar tissue is of less value for hearing purposes than one in which the internal wall, oval and round windows, are free to catch sound vibrations. The presence of a foul discharge, of cholesteatoma, of polypi or granulations, of displaced ossicles, or fistulæ leading into the attic or back toward the *oditus ad antrum,* point to the necessity for this type of operation. It is premised that all our resources in the way of local and constitutional treatment have been intelligently applied, diseased tonsils and adenoids removed, and stenosed nostrils rendered patent.

A word may be said as to the influence of large tonsils and adenoids on aural suppuration. While they undoubtedly favor acute inflammation of the middle ear and frequently help to keep up the discharge, their removal will not cure an otorrhea that arises from dead bone. They should be removed in any case, if diseased; but too much should not be expected by the surgeon or promised to the parents, in consequence of their removal.

The question of age often arises. Given the presence of the pathological conditions mentioned above, age may be disregarded. As a matter of fact, however, children under 3 or 4 years of age with chronic suppuration may, as a rule, be treated on the expectant plan. They can hardly at that age be called intractable cases. Sufficient time has not elapsed for

*Read, and cases presented, at a Clinical Conference of the Medical Board of the Children's Hospitals and Schools, Randall's Island, October 29, 1912.

the trying out of local and constitutional treatment, and the functional tests are not reliable. But from the age of 5 and upward, we find many children who have had discharging ears for two or three years, who are growing deaf in the affected side and who have received careful and persistent local treatment. Such children are not only a source of infection to others and of autoinfection to themselves, but ultimately become deafer than they would be after a skillfully performed radical operation. It is this question of function that has deterred us from dealing radically with chronic suppuration in children. There is a certain inevitable limitation of auditory power after the operation which has to be balanced against the possibility, however remote, of a return to normal under less heroic measures. And there is a certain complacent optimism, both lay and professional, in regard to the chronic ailments in children, expressed in the phrase "the child will grow out of it" to be reckoned with. Every physician, however, knows, or is "charged with knowledge," as to the dangers attending the chronic running ear and its possible complications.* If an operation can be perfected which will not endanger life, which will preserve a useful degree of function, and leave no deformity, it would seem the thing to choose as against the uncertainties and dangers of allowing suppuration to go on indefinitely.

The Operation: The radical mastoid operation (Stacke, Schwartze-Stacke) consists in the removal of the structures of the middle ear, together with diseased cellular portions of bone in the mastoid process, throwing the tympanum and antrum into one cavity by removing the bony bridge between them, and adjusting the soft parts so as to cover as far as possible the bony cavity thus made.

The incision begins at a point in the middle of the mastoid tip, is curved rather sharply backward, and ends at a point above the meatus as shown in cut. (Fig. 1). Its advantages are that in most cases the sutured edges have bony support in at least part of their extent after operation is completed, instead of resting on a mass of gauze packing, and being subjected to inequalities of pressure by the dressing. The incision is carried down through skin, muscle and periosteum as far upward as the lower border of the temporal muscle, when the skin only is cut through. Cutting into the temporal muscle provokes bleeding, prolonging the operation by the time required to control this hemorrhage. There is, moreever, a good deal of exudation from the injured muscle, which may delay healing. The auricular support is, to some extent, impaired, and a subsequent sagging of the whole auricle may result. These are small details, but perfect results in this operation depend on a meticulous regard of details. (It is not always possible to employ this, the incision of choice. Where a previous simple mastoid operation has been performed, we are obliged to go through the old scar.) No attempts at elevation should be made until the periosteum is thoroughly incised and bleeding stopped. When this is done, elevation of the whole thickness of the flap is easily accomplished without bruising or mauling the tissues—an important desideratum in healing. The field of operation

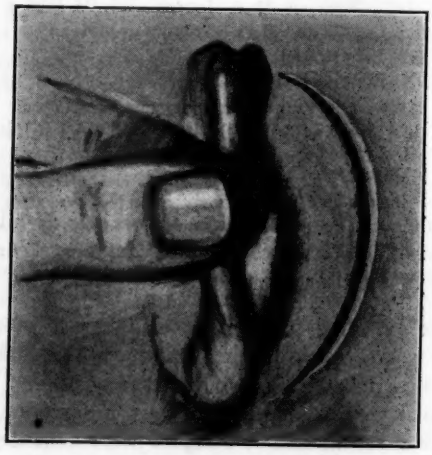

Fig. 1.—The Incision.

having been laid bare, the mastoid cortex is removed with mallet and chisel and the cellular and diseased parts with curettes and rongeurs. Even in quite young children we not infrequently find the bone hard and barren of cells except for a small antrum lined with a necrotic membrane and filled with granulations. This, the infantile type of mastoid, has always been associated, in my experience, with a high degree of functional impairment.* In many such cases it is safe to do the Stacke operation. That is, simply clean out the antrum and middle ear, throwing them into one cavity and leaving the greater part of the mastoid process undisturbed. This gives a comparatively small cavity to line with

*It is hardly necessary to dilate upon these dangers and discomforts. The pus is contagious. It gives rise to furuncles in the aural canal, to pustules, impetigo and eczema upon the face; it gets into the eyes, and is a danger to those in contact with the patient even after he himself has acquired a relative degree of immunity. In some children it has a profoundly depressing influence on the general health. It is known, moreover, that ear and nasal discharges contain bacteria of infectious disease for a long time, and are the means of disseminating those diseases. Besides all this, there is the ever present possibility of a recrudescence of acute symptoms when the body resistance is low or in the presence of an attack of grippe, etc., sometimes resulting in meningitis, brain abscess or sinus thrombosis.

*For a long time we believed that this type of mastoid was due to a condensing osteitis, dependent on the suppurative process, but it seems as if we may have to abandon this view. Cheatle offered many proofs, against the theory, and now the X-ray often shows both the affected and unaffected mastoid processes in the same individual to be of the same structure.

epithelium and the flaps of the membranous canal go far toward covering it; but it is always well to be sure that there is no small track of necrosis leading down to a tip cell or along the wall of the lateral sinus. This is very easy to overlook, results certainly in delayed healing, and possibly necessitates a secondary operation.

The mastoid cells having been dealt with, the anterior soft parts are drawn further forward, the membranous canal is separated from its bony attachments, except anteriorly, and held out of the way either by special retractors or a wide strip of gauze passed through the meatus. The bridge of bone separating the antrum and middle ear is next removed, forceps or chisels being used at the discretion of the operator. The posterior canal wall is then taken down to the level of the external semicircular canal, giving free access to the tympanum.

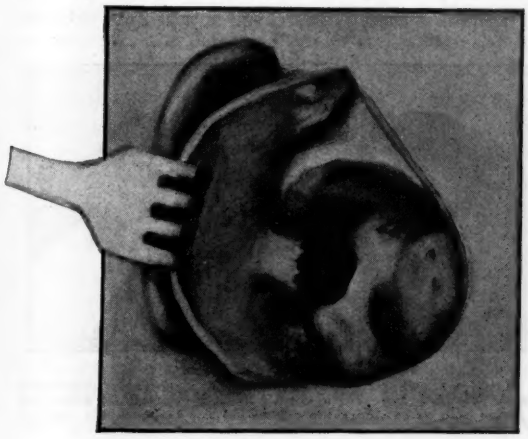

Fig. 2.—The completed bony operation.

Here what remains of drum and ossicles are removed, the overhanging anterior wall of the attic smoothed off and made flush with the bony canal, and the mouth of the eustachian tube curetted, gently but thoroughly. The bony operation is finished by curetting off all projecting portions of bone, making the surfaces smoothly continuous, so that epithelial cells will spread quickly, and no recesses left to harbor granulations. The hypotympanic floor edge, especially, must be levelled. It is not necessary here to go into minute details as to what precautions are to be observed to avoid injuring or exposing the facial nerve. The experienced aural surgeon is familiar with the complicated anatomy of this region and no one else has any business to attempt this operation. It may be remarked, however, that while working in the middle ear, an electric headlight or good reflected light is employed, and the assistant must keep the field dry. In children, particularly, we must avoid the too zealous use of the curette upon the internal tympanic wall and in the region of the round and oval windows. It is better to leave a few granulations than to get a facial paralysis or infect the labyrinth. Exposure of the dura is to be avoided if possible.

Plastic: The operative procedure upon the bone being completed, flaps are cut as follows. A pair of ordinary thumb forceps are introduced into the membranous canal through the meatus and the blades slightly spread. Between them the membranous canal is split up to the margin of the concha with a straight, blunt-pointed knife. The knife is then turned at right angles to this incision and a cut made curving down to the floor of the meatus, thus allowing the lower flap to drop freely to the bottom of the bony cavity. A similar cut is made upward,

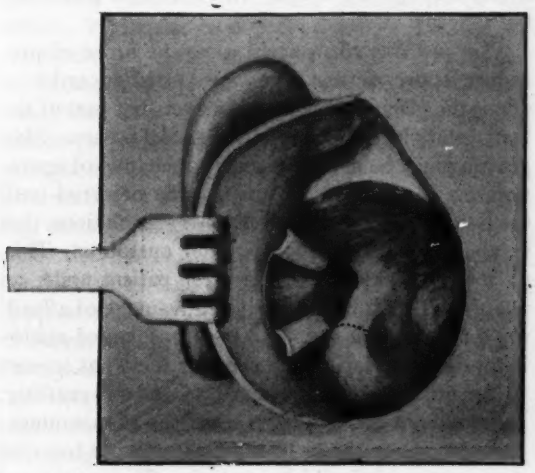

Fig. 3.—Flaps cut ready for anchorage. Dotted lines enclose area usually covered with skin when grafting is done.

starting again at the end of the first incision. The meatus is thus symmetrically enlarged enough to allow the little finger of the operator to pass through freely. This will, in the end, give a meatus about one-third larger than normal, but it is round or oval, and not noticeable. I have found no advantage in making a larger opening than this, which is of sufficient dimensions to allow free access to the interior of the cavity for subsequent treatment. Where cartilage is dissected out and the meatus greatly enlarged there is apt to be a great deal of epithelial desquamation and crust formation which goes on for months or years and renders it necessary for the patient to present himself at intervals for their removal. With the opening here advocated I have not experienced this trouble. The next step is to see that the interior flap fits snugly into the upper part

of the bony cavity. Enough fibrous tissue is dissected away from the skin flaps to fit snugly into the walls of the bony cavity. If too much fibrous tissue intervenes a triangular section is cut out with the scissors and the flaps anchored in position by a single catgut suture. No rules can be laid down for the placing of this suture. It must be placed where it will achieve the results desired. The lower flaps rarely need anchorage, but a suture may be called for here as well as in the upper angle. The flaps being in position, the cavity thoroughly dried, the posterior wound is now closed either by silkworm gut sutures or the Michel metal clamps. The latter afford an almost imperceptible scar, but the stitches have the advantage of passing through the thickness of the flaps and drawing the edges of the periosteum in fairly close apposition. The wound is then packed firmly through the meatus with iodoform gauze and the external dressing applied.

Skin grafting: In certain cases the order of procedure above outlined may be varied in order to admit the placing of skin grafts over that part of the bony cavity left uncovered by the meatal flaps. Skin grafting may be done primarily at the time of operation, or all the plastic work may be deferred until the bone begins to be covered with granulations, that is, about a week or ten days after operation. This, of course, necessitates putting the patient under an anesthetic, but it has the alleged advantage of affording a better blood supply to the transplanted epithelium. As far as my experience goes there has seemed to be no special gain in the secondary grafting; certainly not enough to balance the disadvantages of a second anesthesia. Skin grafts are cut from the inner aspect of the thigh as a rule. The cutting and placing of the grafts requires no little skill and patience. The skin must be removed in an even thickness, by means of a special razor. It is then spread out on a glass slide and transferred to the interior of the wound. When in position air and blood are sucked from under it with a pipette, causing it to adhere closely to the bone. No attempt is made to cover the whole cavity, as Ballance does.* The wall of the tympanum, attic and facial spur and part of the antrum is enough. (See Fig. 3.) The graft is held in position by small balls of cotton dusted with aristol powder. Eight or ten are required. A very small one is first placed over the mouth of the eustachian tube and the others introduced one by one until the graft is covered. I have found it an advantage to attach a thread to each ball, and to carry the thread out of the meatus. This insures the removal of every ball when the wound is dressed. Upon this foundation of cotton, plain gauze strips are lightly packed until the whole cavity is filled. The posterior wound is then closed as before, and the usual large outer dressing applied.

After-Treatment: In ungrafted cases the first dressing is done on the third or fourth day. Stitches and packing are now removed and the cavity treated by tamponing with gauze until epitheliazation is completed. Sponging or mopping is to be avoided as much as possible, for the reason that the growing epithelium is thereby destroyed and healing delayed.

Fig. 4.—Showing cosmetic results in a particularly unfavorable case. This boy had several simple mastoid operations done over a period of 5 years, the skin back of the ear being largely replaced by dense scar tissue.

For the same reason the introduction of strong antiseptic solutions is to be deprecated. When cleaning seems necessary, gently syringing with normal saline, or weak peroxide solution, will suffice. Exuberant granulations are best reduced by the application of the nitrate of silver bead. The point at which tamponing may be stopped and the cavity left open to the air can only be learned by experience. Each case is a law unto itself. If, for any reason, granulations get the upper hand, much time will be saved by curetting them out thoroughly. This only takes a moment and can be done under nitrous oxide anesthesia, or a few whiffs of chloroform. Epidermatization will then proceed very rapidly as a rule. Complete healing should take place in from three to six weeks.

Where the skin graft is employed, all packing is dispensed with after the first dressing, the cavity left open to the air, and syringed out with one of the solutions before mentioned if there is any dis-

*It is from the freshened bony surface left by removing the anterior wall of the attic, hypotympanum and posterior canal wall that troublesome granulations spring, filling up the fundus of the canal; and if these surfaces are successfully grafted, the chief object of the procedure is attained.

The internal tympanic wall takes care of itself. Epithelium spreads from the neighborhood of the oval and round windows and facial canal where, for obvious reasons, curetting is not thoroughly done. This always takes place; and in improperly cared for cases, not skin grafted, where granulations grow in and cover the tympanum deeply, and skin over, we usually find in a week or two a small sinus leading back to the internal wall. This is commonly but wrongly, I believe, attributed to infection from the eustachian tube. It is simply an illustration of the fact that an epithelium lined cavity insists on establishing a communication with the outer air. If such cases are watched we note that this small opening gradually enlarges, the granulations are absorbed, and a normal canal is ultimately established.

charge. When the whole cavity is successfully grafted, very little after treatment is required. But in the method here advocated, that of only partially covering the bony wound, there is a good deal of exudation from the raw surfaces for a week or ten days, and granulations have to be watched and touched with the silver bead, but no packing is necessary. These disadvantages are more than compensated for, in my opinion, by the smaller resulting cavity and thicker and healthier epithelium lining.

Complications have been gratifyingly few. In no cases undertaken purely for the cure of suppuration was the facial nerve injured. In one child with acute symptoms and extensive necrosis, we found the facial nerve exposed for about one-third of an inch. Although the nerve was not injured, facial paralysis ensued, and lasted for a number of months. In another case, also acute, a large sequestrum was removed through the meatus and facial paralysis supervened previous to operation. In another child, a syphilitic, the lateral sinus was exposed for an inch or more, and at the first dressing a large piece of the sinus wall came away with the packing. No infection took place, and beyond a rather free hemorrhage at this and a subsequent dressing, no harm resulted, and the child made an uneventful though slow recovery. No deaths.

149 West Eighty-first Street.

PERITONITIS FROM RUPTURING PUS TUBE.

Every case of pus tubes or parametric abscess, regardless of its duration, should be treated as a case known to contain organisms capable of producing peritonitis in the event of rupture. It is by such a course only that the risk of infection is reduced to the minimum.—F. D. SMYTHE, in the *Southern Medical Journal.*

PERINEPHRITIC ABSCESS.

Cases of perinephritic abscess are not rare and successful treatment depends on early recognition and early incision, thus evacuating the pus before it has had time to burrow extensively.

The chief symptoms which should aid in the diagnosis are, first, the history; second, urine analysis; third, the range of pulse and temperature; fourth, the leucocytic count; fifth, and most important, the ever-present point of tenderness between the internal oblique, the 12th rib, and the erector spinæ muscles.—E. C. ROBITSHEK in *The Journal-Lancet.*

TENDON-TRANSPLANTATION IN TALIPES FROM ANTERIOR POLIOMYELITIS.

B. F. ZIMMERMAN, M.D.,
Louisville, Kentucky.

One of the most unfortunate and frequently observed sequelæ of either endemic or sporadic anterior poliomyelitis is varying degrees of disability from gradually developing talipes, several types of the deformity having been thus noted; and while congenital talipes bears no relationship whatsoever to the acquired variety, the deformity may be quite similar. Clinically, however, there is an essential and distinctive difference, *i. e.,* in the former there is but slight tendency to recurrence of the deformity after proper reduction has been accomplished, whereas in the latter, manual or mechanical correction is usually followed by prompt return of the deformity, and surgical intervention becomes imperatively demanded to insure permanency of the effect. While the operative procedure must of necessity be varied, according to the extent and character of the disability and the deformity to be overcome, the most appropriate remedial measure is tendon-grafting, tendon-transference, or tendon-transplantation, with or without the production of arthrodesis. "The newer procedure of muscle-grafting, tendon-transference, and arthrodesis, has widened the scope of surgical treatment, both of paralysis itself, and of its resulting deformities, and promises to effect an entire revolution in this branch of surgery." (Tubby and Jones: Surgery of the Paralyses.)

I wish to express entire disagreement with Purckhauer and others who insist that the paralysis following poliomyelitis is oftentimes "not an actual paralysis, but more the result of injury from over-stretching of the muscles during the course of the disease"; *i. e.,* that loss of elasticity in consequence of over-stretching may simulate paralysis. One of the authors (Purckhauer) reports several examples of paralytic pes equinus where the extensors were over-stretched, but regained their functionating power when permitted to retract. It is believed the hypothesis can be fairly well substantiated that the deformity under consideration represents a true paralysis, the statements of others to the contrary notwithstanding.

The employment of so-called "silk ligaments" has been advocated by some surgeons in an effort to successfully overcome the deformity or "residual paralysis" resulting from anterior poliomyelitis, the objects being: (a) to secure closer approximation of the articular surfaces, and (b) to excite reactive inflammation with consequent formation of exu-

dates, in the hope of later securing firm organization. The utilization of the silk method may be permissible in certain varieties of the deformity, *e. g.*, in the so-called "drop-foot" type silk may be advantageously passed beneath the annular ligament of the ankle, thus suspending the foot, but in other types of paralytic club-foot tendon-transplantation is the most rational procedure.

Where the patient is less than ten years of age it has been considered by some operators distinctly inadvisable to produce arthrodesis of the ankle joint in attempting to overcome the deformity of paralytic club-foot. This is believed to be a palpable error in surgical judgment, and arthrodesis may be advantageously produced when indicated regardless of the age of the patient. Certainly this method of treatment possesses the advantage of preventing return of the deformity, provided permanent ankylosis is primarily secured; moreover, it is obviously of great value in connection with tendon-transplantation, which may or may not be entirely successful.

According to Campbell, tendon-transference has oftentimes failed to produce the desired results because the mechanism thereof has been imperfectly understood. (1) The transferred muscle must be strong and healthy, no attempt should be made to utilize one which is even to a slight degree paretic; (2) the tendon must be made to parallel, for a considerable distance, the tendon for which it will in future act; (3) it must tunnel the subcutaneous fat, so that no adhesions will form.

Böcker advocates the transplantation of tendons for the correction of all paralytic deformities of the feet, and reports several illustrative cases, in one of which there was complete paralysis of the peronei, tibialis anticus and extensor digitorum communis; he transplanted the flexor hallucis longus to the peronei, and the extensor hallucis longus to the navicular bone, the tibialis anticus being transplanted to the cuboid bone. The result is said to have been satisfactory.

After extensive study of tendon-transplantation, Wetzler claims that: (a) paralyzed tendons do not stretch to an abnormal extent, nor do they tear as easily as assumed; (b) that sutures anchored to paralyzed tendons withstand traction quite well, contrary to the ideas expressed by Lange and others. He advocates the Vulpius tendon suture which will withstand a considerable amount of traction.

Several examples of paralytic talipes have recently come under my observation, three of which, representing the same type of deformity, will be briefly reported herein.*

*The three patients herein mentioned were exhibited before a meeting of the Jefferson County (Kentucky) Medical Society, April 14, 1913.

(1) Female, aged ten years; family history good; personal history negative except diphtheria at age of three. On July 4, 1908, it was discovered by the parents that the child could not walk, and investigation developed the fact that during the previous night there had occurred sudden paralysis of both lower extremities. She was unable to stand on either leg for three weeks, and was then able to walk with assistance. Improvement was rapid and there was complete restoration of function in the right leg. However, certain muscles of the left leg remained paralyzed, the left limb was much smaller than the right, the movement of the foot being imperfect and difficult.

A few months later deformity was noted in the left foot, *i. e.*, the abductor muscles having apparently suffered most a condition of varus resulted. Deformity gradually increased and a brace was applied which was worn until early in 1912. The deformity had then progressed to the point where a brace could not be advantageously used.

When seen by me in July, 1912, the right leg was apparently normal, but the left below the knee showed decided atrophy and weakness of the muscles, the deformity being of the type known as equino-varus. Only the tibialis anticus had apparently completely recovered its function. A preliminary operation was performed, which consisted in forcible over-correction of the defomity and cutting the plantar fascia, the limb being placed in a plaster cast and maintained in that position for a month. August 31st, tendon-transplantation was executed. A portion of the tendon of the tibialis anticus was detached at its insertion and split beyond the annular ligament; the end of the tendon was then inserted into the outer side of the periosteum of the foot, the transplanted tendon being sutured to the two outer fasciuli of the common extensor of the toes. A plaster cast was applied and permitted to remain intact for a month, then a suitable brace was prepared which the patient has since worn.

(2) Female, aged eight years; had scarlet fever at three. One morning about three years ago the parents censured the child for crawling about the floor instead of walking, but investigation showed that it was impossible for her to walk as the limbs were paralyzed. She remained in that condition until afternoon of the same day, when she found she was able to walk. No paralysis other than this was noted. A month or two thereafter deformity of both feet developed, which gradually increased until a varus position (both feet) resulted. About this time another surgeon cut the plantar fascia under local anesthesia, and then applied plaster casts which were permitted to remain intact for five weeks. After removal of the casts the outer soles of the shoes were elevated and the child allowed to walk.

The deformity almost immediately returned and gradually increased until the patient came under my observation, when there was a well-marked varus position of both feet, more pronounced in the left, with strong contraction of the plantar fascia of both feet.

In December, 1912, a preliminary operation was performed which consisted in cutting the plantar fascia, forcible over-correction of the deformity, and application of plaster casts, which remained intact for a month. January 7, 1913, the left foot was operated upon, and February 10 the right foot, in both instances transplanting a portion of the tendon of the tibialis anticus to the opposite side of the foot, inserting it into the periosteum covering the calcaneus and cuboid bones, with arthrodesis of the calcaneo-cuboid joint of either side. The casts were removed in one month and suitable braces applied.

(3) Male, aged eleven years (brother of No. 2); had diphtheria at three, otherwise had enjoyed good health. At the time deformity was noted in his sister's feet, it also began in his. Operation similar to that performed upon his sister was executed so soon as the deformity became pronounced, viz.: the plantar fascia was cut, with over-correction of the deformity, and casts applied. When the casts were removed the deformity returned, and his feet are now an exact counterpart of his sister's before tendon-transplantation was accomplished.

The first-mentioned case was undoubtedly one of acute anterior poliomyelitis affecting the motor centers controlling the muscles of the lower extremity, and, as is usual in such cases, recovery was rapid and decided, the lesion in the cord never being as severe as the paralysis would seem to indicate. Usually some of the motor centers are entirely destroyed, others being merely crippled in certain degree from which they ultimately entirely recover. Again, much of the paralysis may be due to the pressure of exudate upon the motor centers, and with absorption of this exudate there is restoration of function.

It is believed cases (2) and (3) were examples of pure anterior poliomyelitis, one showing only slight symptoms, the other no immediate symptoms. Both, however, presented evidence of partial paralysis of the abductor muscles of the foot—the peronei.

It is especially in the paralytic type of club-foot that the surgeon may hope to secure favorable results from tendon-transplantation. It is advised, however, that this procedure should not be attempted until every effort has been made to restore the muscles to normal function. When marked deformity has supervened and treatment has been neglected, it is believed better results may be accomplished by first correcting the deformity, then applying electricity, hydrotherapy, massage, etc., to strengthen the weakened muscles.

The object in transplanting tendons is to make healthy muscles perform the work of those partially or completely paralyzed, and careful study is required before selecting the tendons to be used.

The best results from tendon-transplantation are in paralytic club-foot of the varus type. Where the paralyzed muscles are naturally not very strong, more favorable results may be expected to accrue from the substitution than where the affected muscles are strong and powerful. The strong tendon of the tibialis anticus (the strongest of the anterior tibial group) may, to a great extent, be made to compensate for the defect in the peronei.

The technic of the operation is comparatively simple and easy of accomplishment. (1) An incision is made along the inner anterior aspect of the foot from the first metatarsal bone upward to the annular ligament of the ankle; (2) The tendon of the tibialis anticus is isolated and a portion (at least one-half) detached at the point of attachment, carrying therewith the periosteum and a thin section of bone; (3) The tendon is split upward to the annular ligament, then beneath the annular ligament and above as far as the attachment to the muscle if deemed advisable; (4) A counter-opening is then made on the outer side of the foot over the calcaneo-cuboid articulation and a pair of hemostatic forceps or blunt scissors being passed beneath the skin and superficial to the extensor tendons, the tendon is grasped and "dragged" through this tunnel and out at the counter-incision; (5) The calcaneo-cuboid joint is then opened and a narrow strip of the articular surface on either side removed, the joint being closed with catgut sutures; (6) The periosteum is then incised and elevated, and the detached tendon with its periosteum and bone placed beneath the elevated periosteum of the cuboid or os calcis, being held in position by a fine silk suture passed through the reflected periosteum and the tendon; (7) The periosteum is then sutured and the wound closed with catgut, a plaster cast being applied to maintain the foot in an over-corrected position.

Care should always be exercised not to have too much nor too little tension upon the transplanted tendon. If there be too great tension, the muscle works at a disadvantage and there is great traction upon the point of attachment; and if too little tension, that part of the muscle-force utilized in "taking up the slack" of the tendon is lost, and the foot will not be maintained in proper position. The tendon should be on slight tension when the foot is in a slightly over-corrected position.

REFERENCES:

Ryerson: *Journal of the American Medical Assn.*, June 17th, 1911, p. 1846.
Bartow-Plumer: *Ibid.*
Lord: *Surgery, Gynecology and Obstetrics*, April, 1908, pp. 406-9.
Purckhauer: *Munch. Med. Woch.*, May 30th, 1911; *J. A. M. A.*, July 8th, 1911, p. 175.
Campbell: *Memphis Med. Monthly; J. A. M. A.*, January 28th, 1911, p. 276.
Bocker: *Deut. Med. Woch.*, July 20th, 1911; *J. A. M. A.*, August 26th, 1911, p. 777.
Wetzler: *Zeit. f. Orth. Chir.*, bd. xxviii, 1911; *Surgery, Gynecology and Obstetrics*, March, 1912, p. 312.

DISEASES OF JOINTS AND BONE MARROW.

LEONARD W. ELY, M. D.,
DENVER.

(Continued from the July Number.)

RUDIMENTARY FORM.

CASES CHARACTERIZED BY INFLAMMATION, OR PROLIFERATION, OF THE SYNOVIA—

SIMPLE SYNOVITIS.

In this form one or two joints swell and become painful, either at the same time or one after another. The pain may be severe or slight, fluid may be present or absent. Sometimes the entire synovia is sensitive to pressure, at other times the sensitiveness will be centered at one spot. The joint may creak. Motion, while painful, is limited but little, if at all, and then usually by the mechanical obstruction caused by the fluid in the joint. There may be a slight rise in temperature at the beginning, but fever is not a characteristic of the process. Constitutional symptoms are present or absent according to the severity and the nature of the infection.

Under this head would come cases of non-traumatic simple synovitis, intermittent hydrops[1], etc. The process often involves the knees and no other joints.

The bone, the cartilage, and the fibrous structures about the joint show no gross tendency to involvement. The disease shows no tendency to spread through the other joints. It involves one or two, and there it stops. It may clear up at any time and leave no trace, or it may recur or persist.

These are just as much cases of "arthritis deformans" as are the cases with extensive destruction of the bone and cartilage. The infectious agent here is feeble in its manifestation, and the disease expends its energy on the synovia.

The diagnosis is to be made with great care, not in the haste of a five-minute office examination. In all these chronic arthritides our only hope of success is in thoroughness and in taking pains. The patient's family history and his own history from childhood must be known, his occupation, his habits, the dates of every infectious disease, and especially of venereal infection or typhoid fever, the possible sequence of his symptoms upon any of them, the exact course and chronology of his present disease, and all its subjective symptoms. Has he had a purulent otitis, or any symptoms in nose, throat, tonsils, gastro-intestinal canal, appendix, gall-bladder, or genito-urinary tract? Nothing is too insignificant to mention. A history of recurring trauma should also be sought.

All these facts should be noted down, before proceeding to the physical examination. The examination is to be as thorough as we can make it. One searches for every possible source of infection, and, if one lacks the knowledge to conduct any particular line of investigation, one calls in a colleague to conduct it. Every organ is interrogated.

Attention is last of all turned to the joint or joints. Keeping in mind the pathological lesions of this type, we look for their clinical manifestations.

With these data before us we are often in a position to make a diagnosis, though a day or two for their study is always desirable. A show of brilliance and diagnostic fireworks is quite out of place here. If we be still in doubt, a Wasserman or

Fig. 49.
The multiarticular form of Type I in the fingers. Note the swelling and the flexions (Goldthwait).

tuberculin test may occasionally be of assistance. Skiagraphy is of the greatest use to detect not only local lesions of the joints, but also misplacements of the viscera. Naturally a skiagram of a slight, purely synovial inflammation will be mainly useful as excluding cartilage and bone involvement.

DIFFERENTIAL DIAGNOSIS.

The lesions from which the disease with these manifestations must be differentiated are synovial tuberculosis, gonorrheal synovitis and the synovitis that occurs as a manifestation of tertiary syphilis.

From synovial tuberculosis the disease often cannot be differentiated without a microscopic examination of a piece of the synovia. The tuberculin tests are merely suggestive. An injection of fluid, aspirated from the joint, into a guinea pig's abdomen may clinch the diagnosis. Failure of these measures makes it advisable to view every slow

[1] See an interesting article by Klemm, *Arch. f. klin. chirurgie*, February, 1912.
The author believes that many cases of intermittent hydrops are due to a chronic infectious (pus) osteomyelitis in the end of the bone.

case of uniarticular synovitis as possibly tuberculous.

Acute traumatic synovitis follows immediately on an injury, and usually subsides on rest and protection. Often one may detect evidences of a torn ligament or of a displaced fibro-cartilage.

Our task in these cases is to determine the cause of the inflammation, for, that the inflammation is there is easy to decide. This will be taken up in the description of the severer forms.

A syphilitic synovitis presents no difference from the lesion we are discussing. As it is, having determined that the disease is syphilitic, by the history and the concomitant phenomena, we immediately transfer it to the category of syphilitic joints, and treat it accordingly. The diagnosis is made in the well-known manner. Much the same may be said of a *gonorrheal joint.*

Fig. 50.

Skiagram of the multiarticular form of Type I. Note the flexions and the superextensions of the phalanges, the rarefactions and the destruction of the bone ends, and the bony ankyloses. Note also the involvement of the wrist bones and of the radii (Goldthwait).

TREATMENT.

The treatment is, first of all, to remove the cause, if we can. Usually then the trouble will disappear of itself. In the meantime rest is indicated in the acute stage. The diseased appendix, gall bladder, or tonsil must be removed. The ear, the nose, the intestinal or genito-urinary tract must receive the appropriate treatment. A syphilitic synovitis usually yields promtply to mercury or to Salvarsan. The iodides are not of so great value in joint disease. Traumatic synovitis demands the removal of the cause of the mechanical injury.

If symptoms persist the joint may be strapped with adhesive tape, it may be baked or massaged. Hydrotherapy or vibratory massage will often be found useful. The efficacy of any form of ultra-rays is doubtful. The salicylates often will relieve the pain temporarily, but they are not curative. Those cases dependent upon absorbtion of intestinal poisons will be benefited by purging; hence the efficacy of many Spas.

If gross misplacements of the abdominal organs be present, they should be corrected either by an operation or more frequently by the use of apparatus and exercises to support the belly wall. The usual form of apparatus is a light spinal brace, with an apron over the lower abdomen. Goldthwait puts his severe cases to bed for a while on a hard mattress, with their shoulders low and a firm cushion in the back of their middle thoracic spine, with the idea of expanding their chests, pulling up the diaphragm, and thus making room for the displaced abdominal organs. His results seem excellent.

SEVERE OR MULTIARTICULAR GROUP.

This group is essentially multiarticular and pro-

Fig. 51.

Skiagram of a case of multiple arthritis of Type II. All the interphalangeal joints are involved. Note the bony outgrowths and the irregular line of the joints.

gressive, involving various joints in succession. It occurs almost certainly as a late syphilitic manifestation[1]. The view has been advanced that a focus of infection exists somewhere in the body in every case—in the gall-bladder, the tonsil, the appendix, the genito-urinary tract, etc.—and that just as the gonococcus can cause an acute arthritis, and, when domiciled in the original host, a chronic arthritis, so can the typhoid bacillus, the pneumococcus, the streptccoccus, the stapylococcus, and possibly others. This view is largely theoretical, but evidence is constantly accumulating to support it.

An increased excretion of calcium salts has been detected in these cases. This is what one would expect when the bone is atrophying.

PATHOLOGY.

The essential feature of this type of arthritis is a

[1] *Colorado Medicine*, August, 1911.

proliferation of the synovia, and to this in most instances is added a similar process in the lymphoid marrow[2]. The reports of microscopic examinations of these joints in the early stages are unfortunately rare, and it is only from these reports that we can judge of the nature of the disease.

The synovia proliferates and is thickened, inflamed and thrown into folds. The bone marrow is, in some instances at least, the seat of inflammatory changes. Hale White found foci of recent inflammation in the marrow, as shown by round cell infiltration.

Now, these are exactly the changes that are early apparent in joint tuberculosis[3], and consequently one is not surprised by the statement that not only are the subsequent changes in the bone and cartilage much the same as those seen in the latter disease,

Fig. 52.
Skiagram of multiarticular lesions of Type II (Goldthwait).

but also that neither by the symptoms, nor by the physical signs can the two diseases be differentiated. If a single joint only were inspected, one could not make a diagnosis between the two diseases, even if the joint were opened for gross inspection. It is only by the demonstration of the the tubercle, by its tendency to necrosis and to secondary infection, and by its uniarticular nature that a tuberculous joint can be recognised. In other words we cease to look hereafter for any peculiar effect of toxines or faulty metabolism upon the bone and cartilage, but, knowing the sequence in tuberculosis, and identifying the changes in the synovia and in the marrow in this type of chronic arthritis, we can predict fairly well what will happen to the other tissues—the stroma, so to speak.

We shall not here go into the minutiae of all the changes in the various tissues. They have been set forth fully by other writers[1], but we may well devote a few words to some of the essential features of the process.

The proliferation of the synovia may be extreme, and may result in the formation of tags, whose structure varies. The ligaments are usually thickened by increase of their connective tissue. Later in the disease the synovia may atrophy.

By reason of the lack of mobility in the joint and

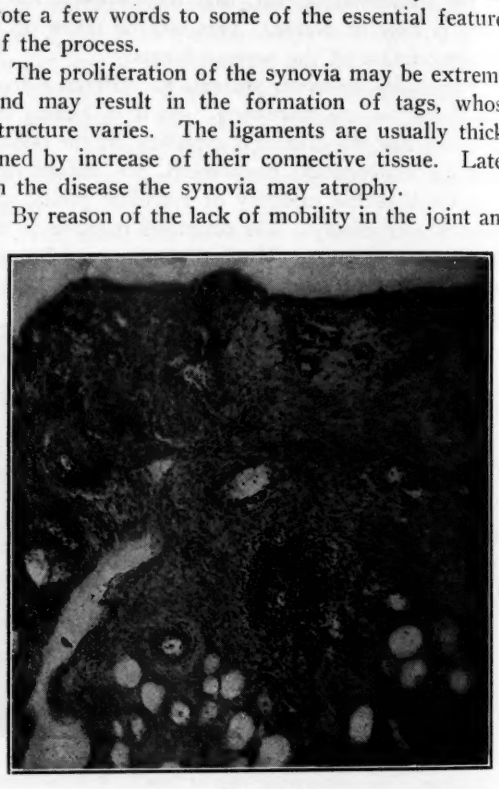

Fig. 53.
Photomicrograph of synovia from a case of arthritis of the hip in an adult male, Type II. Note the collection of round cells about the blood vessel, and the fibrous structure of the membrane. Zeiss apochromatic 16 mm. objective.

of the proliferation of the synovia, or of the marrow, or of both, the cartilage usually becomes fibrillated, and, suffering in its nutrition, degenerates. Erosions appear on its surface. The inflammatory tissue from the marrow may break through the cartilage into the joint. The joint cartilage in this way may be destroyed entirely, or, degenerating in its upper and lower portions, may remain as a thin strip in the midst of fibrous tissue. Fibrous adhesions may form between the degenerated cartilage and its fellow of the other bone entering into the articulation, or between it and the synovia, or between both. Finally, in some cases a bony anky-

[2] W. Hale White, Guy's Hospital Reports, 1902. On the Pathology of Acute Rheumatoid Arthritis.
McCrae says that the first structure to show a change is the synovia, and that this change consists of proliferation. After this the cartilage is sometimes attacked—first eroded by the action of the synovia.
Nathan maintains that the changes in the bone can be perceived by the Röentgen ray before the symptoms are present in the joint.

[3] In Hale White's article appears an illustration of an enlargement of a phalangeal joint that lacks only the presence of tubercles to be characteristic of joint tuberculosis.

[1] Vide Nichols and Richardson, *Journal of Medical Research*, Vol. 21, No. 2. Nathan, *American Journal Medical Sciences*, Vol. 137, p 817.

losis may take place. Nichols and Richardson are authority for the significant statement that a subsidence of symptoms ensues on a bony ankylosis. They also speak of the "proliferation of the destroying connective tissue of the marrow."

CHANGES IN THE BONE AND IN THE MARROW.

"The change" (in the marrow) "frequently extends beyond the layer just beneath the joint cartilage and sometimes includes the marrow of the entire epiphysis, especially in the more rapidly progressing cases. The change consists chiefly of a proliferation of the connective tissue of the marrow, sometimes associated with a proliferation of the osteoblasts. The degree of proliferation of connective tissue varies a great deal. In some instances it is very marked, so that all evidence of normal marrow disappears, and the marrow spaces are

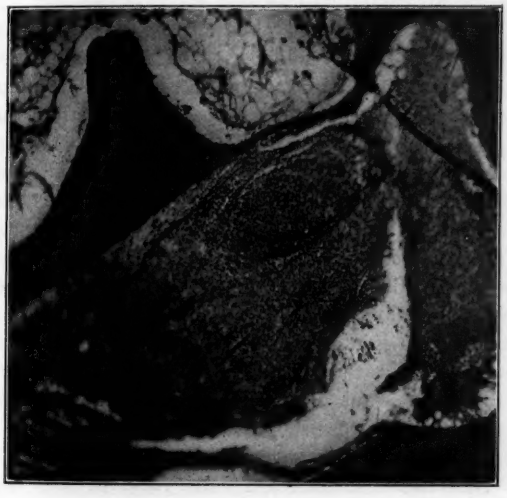

Fig. 54.

Photomicrograph of an inflammatory focus in the marrow. Same case as the preceding. Note the productive osteitis of the trabeculae. Zeiss 16 mm. objective.

filled sometimes with dense nonvascular fibrous tissue, in most cases with a very fibrous, loose-meshed, edematous connective tissue, which may or may not show infiltration with lymphoid and plasma cells"[1].

As opposed to these statements concerning the structure of the bone, Hale White says: "The cancellous tissue is more open than usual." Nathan[2] says: "One finds the marrow more red and the trabeculae of the spongiosa diminished in number and thinner than normal. During the early stages the bone atrophy is distinctly subchondral, but it gradually advances and finally involves the whole epiphysis. In the majority of cases at an early stage one can discover with the naked eye, or at any rate with a low power magnifying glass, minute cavities situated in the subchondral region of the epiphysis within, or at the edges of the bone trabeculae. These are bone cysts[3] and they vary in size, being of course larger and more numerous as the disease advances."

This author regards the changes in the synovia as insignificant in comparison with those in the bone, a view diametrically opposite to that of other writers.

The lesions in this type of joint disease, then, may be summed up as a proliferation of the synovia and of the bone marrow, an atrophy of the bone (either a rarefying osteitis, or a resorption of calcium salts) and erosion and destruction of the cartilage. These result in subluxations, distortions, and in fibrous and bony ankylosis.

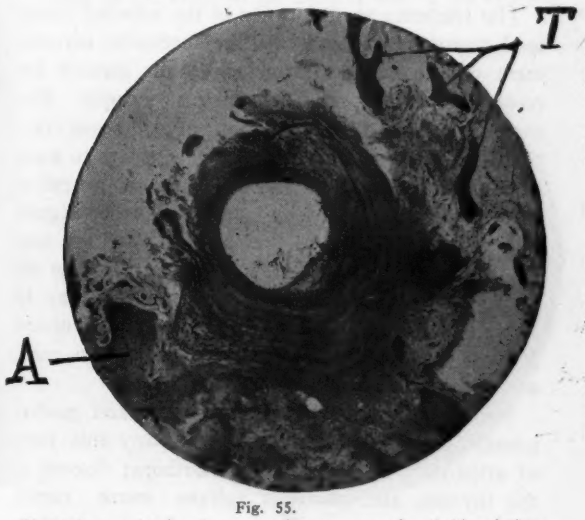

Fig. 55.

Photomicrograph of a bone cyst from a case of arthritis of the hip—Type II. The patient was a young woman. This cyst was located directly beneath the level of the articular cartilage of the femur, which had been perforated at that spot. Zeiss objective aa, no ocular.

SYMPTOMATOLOGY.

Cases belonging to this type may begin suddenly or insidiously. Sometimes the onset is preceded by various local nervous and circulatory disturbances, —tingling, numbness, muscular cramps, stiffness, weakness, hyperaesthesia, sweating, change in color, etc.—at other times its approach is unheralded. One joint after another may be attacked in rapid succession, or the disease may take years for its full development. The history of the disease in any given case may be a series of exacerbations and remissions. Fever and other constitutional symptoms may or may not accompany the invasion of the various joints. A persistently rapid pulse is character-

[1] Nichols and Richardson.
[2] *American Journal of the Medical Sciences*, Vol. 137, p. 835.
[3] Bone cysts occur also in Type 2.

istic of some cases. The lymph nodes are often involved, especially in children—Still's disease. This swelling of the lymph nodes is a strong argument in favor of the infectious origin. The spleen also may be enlarged.

The disease usually attacks first the joints of the fingers, and travels toward the trunk—*centripetany.* Its general symmetrical tendency is more or less characteristic. On the other hand one of the larger joints may be attacked first, and the other joints throughout the body without any regular succession, but sooner or later the symmetry will be apparent. With the involvement of fresh joints, those previously involved may be the seat of an acute exacerbation. The spinal articulations may take part, or, they may be exempt. The hips often escape, though a special form of the disease affecting only the hips and spine is occasionally encountered.

The tendency to deformity in the affected joints is also progressive, and with the successive involvement of the various articulations the patient becomes bed-ridden, and a hopeless cripple. Bed sores then form a serious and often dangerous complication. The patient may finally succumb to some intercurrent disease, to which the malnutrition, often present, renders him an easy prey. Again, during the intermissions the patient's nutrition may be good, and constitutional involvement may be absent. If the thoroacic spine suffer, death may be due to pneumonia or to pulmonary tuberculosis. Muscular cramps are especially frequent in cases with spinal involvement.

Nephritis, general arterial sclerosis, and gastro-intestinal diseases frequently accompany this form of arthritis, according to some authors; disease of the thyroid, and paralysis agitans more rarely. Psoriasis and eczema also are troublesome complications. Accompanying cardiac lesions are comparatively rare.

The skin is often dry and harsh, or glazed, and the subcutaneous tissues of the extremities may be thickened. Pigmented cutaneous areas are frequently present. The nails may be cracked and fissured.

The anaemia which so often accompanies this form of the disease is what might be expected in view of the blood-forming function of the lymphoid marrow. Some observers have noted a fall in the number of red bloods cells, but as a rule the number is about normal. Leucocytopsis may or may not be present. It may be said that the blood changes are not characteristic.

The reflexes are wont to be exaggerated, especially during the acute exacerbations.

The disease may progress to a fatal termination, as indicated above, or it may be arrested, and the patient may recover with a fair amount of motion in the affected joints. It may recur after a long period of quiescence.

LOCAL SYMPTOMS AND PHYSICAL SIGNS.

The disease usually begins with stiffness, pain and swelling. The swelling is soft and often fluctuating, and this fluctuation may be caused by thickening of the synovia, or by fluid, or by both. The affected joints take on a fusiform appearance, and from the start are wont to be in flexion. The proximal interphalangeal, or metacarpo-phalangeal joints are often the first to be affected. Later on in the disease the swelling sometimes disappears and leaves the joint shrunken, often with a distinct constriction at the articular line. The constriction is due to the secondary shrinking of the synovia, and to the atrophy of the articular cartilage.

Motion is restricted almost from the start. In the late stages bony ankylosis sometimes takes place.

Flexions and sublaxations of the diseased joints are often present, and may persist even after the disease has run its course. Frequently the contractures are most troublesome. The skin over the joint is often a pale, waxy color; again, it may be reddened. The Roentgen rays show, as one would expect, a thickened synovial capsule, a thinning and erosion of the cartilage, and an atrophy of the bone. Now, these are much the same changes as those in a tuberculous joint, but tuberculosis is distinctly uni-articular. In the later stages the distortions are easily made out on the plate, but the thickened synovia will have disappeared.

STILL'S DISEASE.

Still has described a special form of this disease[1], occurring in children, before the second dentition, and accompanied by enlargement of the lymph nodes and of the spleen. The pathological process expends itself upon the synovia, and, according to Still, shows no tendency to involve the other tissues of the joint.

Other authors have contributed histories of cases since Still's original monograph, but some confusion still exists as to whether the disease represents a distinct clinical entity, or whether marked general lymphoid involvement is due to the greater tendency in children to disease of the lymph nodes. For the present it seems wiser to include it in the same category with similar disease in adults. None of Still's cases recovered. Subsequent writers have reported recoveries. The prognosis in children is now fairly good and even where considerable fixation of the

[1] Allbutt's System of Medicine, 1901, Vol. 3.
See also Arthritis Deformans, Llewelyn Jones. Wm. Wood & Co., 1909.

joints accompanied by deformity has accurred there is good prospect of fair function.

DIAGNOSIS.

The diagnosis should occasion very little difficulty, for all these cases are peculiar in their progressive and multiarticular nature.

The bony *nodules* that occur in Type II. occur more often in the terminal interphalanges joints, and can be distinguished by palpation; the deformity is often partly a lateral one. The X-ray in that type shows an outgrowth of bone, an exostosis, which seldom occurs in Type I. The obstruction to motion is mechanical only, and is due to the bony outgrowths and to the irregularity of the joint line. Bony ankylosis never takes place.

Tuberculosis is distinctively uniarticular, and presents little difficulty in diagnosis. The secondary

Fig. 56.

Photomicrograph from a case of chronic arthritis in the hip of a young woman, Type II. Degenerated cartilage above, bone below. Note the band of fibrous tissue running down into the bone. Cartilage cells can be seen in it—fibro-cartilaginous tissue. Leitz objective No. 2, no eye piece.

infections and abscesses, so frequent in tuberculosis, are never present in this group.

Gout is slower in its progress, and usually expends its energies one one or two joints. Its chalky deposits are characteristic.

Acute articular rheumatism (inflammatory) might be confused at the outset with the cases of this type which begin acutely, but acute inflammatory rheumatism is essentially a more fleeting disease, usually leaves one joint before going to another, leaving no local damage behind. According to Poynton and Paine, however, the infection which is the cause of acute inflammatory rheumatism is quite capable of causing a chronic arthritis, and quite often does so. Endocarditis and pericarditis are frequent complications of acute inflammatory rheumatism.

PROGNOSIS.

Until recently the prognosis of cases in this group has been almost universally bad. Little could be done to arrest the onward march of the disease, and, except in the instances of spontaneous recovery, those afflicted with it could look forward only to a life of hopeless invalidism and suffering. As the result of recent discoveries the prognosis is now not so bad. Sometimes we can arrest the disease, and often can restore the patients to a state approximating health. In other cases it must be confessed, our efforts will probably be futile. The prognosis in any individual case will often depend upon the amount of care and work the medical advisor is willing to expend, as well as upon the persistence and coöperation of the patient and of his friends.

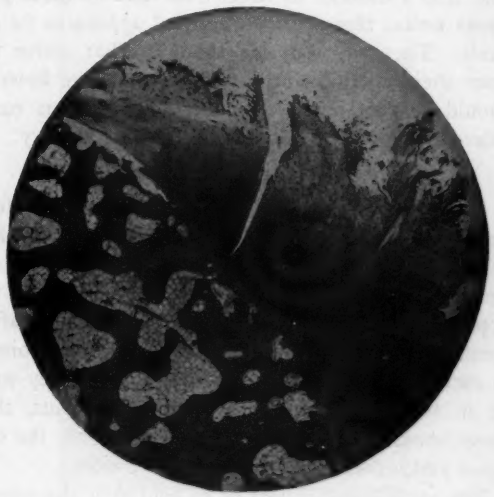

Fig. 57.

Photomicrograph of the same case as the preceding. This picture shows well the degenerating cartilage—its fibrillation. Note the cartilage "tatters." Zeiss objective aa, no ocular.

As in the preceding class, so in this, the treatment first of all consists in removing the cause if we can find it, and we refer the reader to what has already been said on that subject.

If, after careful study, we are unable to find the cause, we must needs fall back upon empiricism. Our first thought is of syphilis without other manifestations. We therefore will do well to carry through a vigorous course of anti-syphilitic treatment for at least six months. The iodides are of less use here. Mercury must be our main reliance, either in the form of intramuscular injections[1] or

[1] A convenient form is salicylate of mercury 10 per cent in liquid abolene. This should be injected deep into the muscles, preferably the gluteal, under strict asepsis, at intervals of one week, first in one side and then in the other. The initial dose should be about 10 minims of the mixture, and this should later be increased to about 25 minims.

of inunctions[2]. Salvarsan should also be administered.

Failing in our antisyphilitic treatment, we may empirically administer extract of thymus gland, after the manner of Nathan. The powdered extract should be administered in doses of ten grains three times a day.

If we fail here, we many possibly have better success with thyroid extract or with the extract of the supra-renals, or even with some preparation of milk that has undergone lactic acid fermentation[3].

CONSTITUTIONAL TREATMENT.

During the acute periods, if high temperature and severe constitutional symptoms be present, we may possible think well of a restricted diet, as in other febrile affections. Some writers maintain that it is a mistake to restrict the diet of these patients *unless their gastro-intestinal apparatus be at fault.* They say that we should rather strive to keep their nutrition at a high point. The bowels should be kept open. A mild dry climate is considered of great benefit, but I doubt its efficacy.

LOCAL TREATMENT.

During the acute stages of the disease and during the exacerbations, the first indication is usually rest. This may be furnished by ordinary rest in bed, or, in addition, we may think it advisable to apply some sort of a splint to the more painful joints. It is important to keep the affected joints in such a position that, if ankylosis result, they will be in the best attitude for function: Thus, the knees should be kept in complete extension, the elbows and ankles at a right-angled flexion.

The application of heat or of cold may also serve to allay the pain. The salicylates here often have a distinct effect, palliative but not curative.

During the remissions the patients may be permitted to go about, in fact they should be encouraged to do so. Exercise in moderation in the open air helps to keep up their nutrition. If necessary, the affected joints may be supported by some form of brace, which not only protects them from injury, but also permits motion through a limited arc. Passive motion to the limit of toleration often serves to retain what motion is possible. Massage and exercises carried out by the Zander apparatus have their advocates. High frequency currents have been praised.

The Bier treatment by passive congestion has been urged, not only for the relief of pain but also to encourage motion, but this treatment has been advocated for so many different diseases, to meet so many different indications, that one hesitates to judge as to what its exact effects may be. It certainly seems to quiet pain in some cases, but whether this is due to the congestion or to pressure upon nerve trunks it is hard to say.

Operative treatment is rarely indicated, except possibly in those joints, such as the knee, where the disease has run its course, and has left behind it hypertrophied fringes which mechanically interfere with function. In these cases one may open the joint and trim away the fringes.

TYPE II.

Cases characterized by Inflammation and Degeneration of the Synovia, and Degeneration of the Marrow, and by Resulting Hypertrophy of Bone and Cartilage.

Under this heading are grouped cases heretofore described as Osteo-arthritis, the hypertrophic form of Goldthwait, and the degenerative form of Nichols and Richardson. It includes such lesions also as Heberden's nodes, *morbus coxae sensilis,* etc.

ETIOLOGY.

Concerning the aetiology of this type we know nothing definite. We may believe that after the manner of all joint cases whose nature we understand, some of these cases are also infectious in their origin. We may believe that they are dependent upon a lesion of some trophic centre in the cord, which, after many years of search, has never been located, we may dismiss them as "metabolic", which again is simply to confess ignorance. We do know, however, that the changes found in this type are often simply exaggerations of those ordinarily taking place in the joints as age advances. Some writers maintain that the two types represent stages in the same process. If the two types ever are due to the same causes, the intensity of the morbid process in the marrow is more probably the reason of the difference in the secondary changes.

Numerous observers have noted that patients with this type of arthritis often suffer with flatulence and intestinal indigestion. This again would point to an infectious origin. Sometimes the onset of the disease is said to follow a "dysentery", which has been suddenly checked.

Olsner affirms that Heberden's nodes are an evidence of longevity.

The influence of trauma is probably greater in this type than in Type I. An internal derangement of a joint, such as a displaced semilunar

[2] Fifty per cent mercurial ointment.
[3] Andrews and Hoke, *American Journal of Orthopaedic Surgery,* July, 1907.

cartilage, an intra-articular fracture healed with marked deformity, may occasion an arthritis that will persist until the cause is removed, and according to the views held by certain writers, even then will leave behind it the lesions of a chronic arthritis. Axhausen produced many of the characteristic lesions of this type of joint disease by puncturing the joint cartilages of animals with an electric needle[1]. A severe single trauma often appears clinically to be the starting point of the disease, especially in the hip. Axhausen's experiments show well the manner in which the trauma acts. Again, persistent recurring traumata received in certain occupations cause many of the cases. In this class would come the stiffened spines found in persons persuing laborious occupations, carrying heavy weights, or doing heavy work in a bent attitude. According to Arbuthnot Lane[2]

Fig. 58.
Higher power of the preceding—cartilage tatters. Zeiss objective C, ocular 1.

and others the changes in the joints of such persons are the results of Nature's efforts to relieve the muscular strain. Lane quotes the coal-trimmers's elbow, often seen in England, as another example.

PATHOLOGY.

Roughly speaking, the change, observed in this type are just the reverse of those noted in Type I. As the result of well marked degenerative processes in the bone marrow, in the deeper layer of the periosteum and in the synovia, the bone and cartlage hypertrophy. Hence, instead of the synovia and marrow encroaching upon the bone and the cartilage, the cartilage and bone may be regarded as encroaching upon the bone marrow and on the synovia. This is the same process that is often observed in other organs of the body. As their essential elements, their parenchyma, degenerate, the connective tissue stroma proliferates, so that the degeneration and proliferation go hand in hand.

The following hypothesis to account for the joint changes is put forward tentatively:

The articular cartilage proliferates throughout its entire extent, and masses of new bone and cartilage are formed at its periphery. At the same time there is a production of new cartilage and bone underneath the articular cartilage, diminishing the space for the marrow. Now, the articular cartilage derives its nutrition from the subjacent marrow. and when this marrow is replaced by bone, the cartilage fabrillates, degenerates, and wears away, leaving the thickened bone bare, and grooved in

Fig. 59.
Multiarticular finger lesions of Type II.—Heberden's Nodes.

the line of joint motion. The cartilage near the periphery, however, deriving its nutrition largely from the synovia and from the periosteum, does not undergo so soon this degeneration and wearing away, but, maintaining its irregularity, hypertrophies, and causes the joint to become flattened and distorted. The hypertrophied masses of cartilage may persist as such, or they may be transformed into bone, causing spurs and exstoses, which interfere with motion. In ball-and-socket joints, the new bone formations render the head of the bone too large for its socket, and subluxations may result. In the hinge joints, the irregularity of the bone formation causes lateral distortions as well as flexions. These lateral distortions are characteristic of the disease. The nodular bone formations in the terminal phalangeal joints were

[1] Axhausen, *Archiv für klinische Chirurgie*, September, 1912.
[2] Lane, *Lancet-Clinic*, Cincinnati: 1913. CIX, 32.

described many years ago by Heberden, and have received the name of "Heberden's Nodes."

Portions of the proliferated cartilage may be torn loose and may form foreign bodies in the joint.

The synovia in this type may appear comparatively normal, or it may proliferate in spots. According to Nichols and Richardson the localised proliferation may result in the formation of papillary masses, composed of granulation or of dense connective tissue. These masses also may later be torn loose and form "joint mice."

Adhesions never form between the opposing joint surfaces, and bony or fibrous union never takes place. We have seen in Type I that the adhesions between the bone ends are due to the prolifration of the synovia and of the marrow through the gaps in the cartilage, but in this type the proliferation, if it exist at all, is not marked. The obstruction to motion is purely mechanical. It will be remembered that in old fractures, where eburmation of the bone ends has taken place, union is impossible.

HISTOLOGICAL PATHOLOGY.

The changes in the bone and cartilage have hitherto been regarded as the essential lesions of this disease, and to the naked eye they appear to be most important, but their study has been almost barren of results. If we carefully examine the behavior of the bone marrow from which these tissues draw nutrition, and of the synovia, we shall immediately detect significant alterations in structure, and possibly in the end we may come to regard the bone and cartilage changes as merely the results of these alterations.

If the synovia be examined under the microscope, areas of round cell infiltrations will be seen, especially in the neighborhood of the blood vessels. The arteries are often thickened and the veins widened. On the surface of the memberane there may be a slight increase of the lymphoid elements, but the memberane itself, while often thickened, can not be said to be proliferated, but rather degenerated. One sees areas of fat cells scattered through it and much new fibrous tissue. The pathological process in the synovia may be interpreted as localised inflammation followed by degeneration. Possibly the signs of inflammation may disappear in the late stages of the disease, but they are certainly present in the active period.

The Marrow. Of the changes one meets in the marrow it is hard to say which are characteristic. Perhaps a fatty change is met most frequently. The normal marrow may be almost replaced by new fibrous tissue in whose meshes the marrow cells may be distinguished. Again, the marrow is packed with cells; in spots it appears practically normal. The marrow spaces are less capacious than normal, on account of the production of new bone. Islands of cartilage in the marrow probably represent the early stages of new bone trabeculae cut across. Evidences of a productive osteitis may be seen especially in these areas where marrow changes are prominent. Cysts are sometimes present, and apparently, when situated immediately beneath the cartilage may rupture and perforate it. The arteries show thickened walls.

The bone is decidedly increased in amount. The trabeculae are thicker than normal, and in larger numbers. Some of them are composed partially of osteoid tissue. The production of new bone dominates the picture.

The cartilage is thickened and in various stages of degeneration. Its appearance is often bizzarre in the extreme. Almost always its structure is more or less fibrillated and broken up. Its surface may be roughened. A thin layer of fibrillated cartilage may be superposed on a thick layer of osteoid tissue containing clusters of large cartilage cells staining deeply with haematoxylin. Granular material similar to that found in the marrow may be seen in the gaps in the cartilage. A ball of cartilage, found loose in one joint, was composed of densely packed cartilage cells with scanty matrix, and was surrounded by a well-marked capsule of fibrous tissue.

SYMPTOMATOLOGY.

The manifestations of this type of joint disease are not as troublesome by any means as are those of the preceding. Constitutional symptoms and changes in other tissues are not conspicuous, though occasionally the patients suffer from indigestion.

Pain and restriction of function in the affected joints constitute the chief cause of complaint. The pain is usually decidedly worse when the joint is used, and often is of small account as long as it is kept quiet. When the lower extremity is affected the patient suffers from a limp. The knee is wont to be in semi-flexion, the hip in flexion, abduction and external rotation. More or less atrophy of the limb is usually present. The restriction of motion, always present, is due to mechanical interference, and not to muscular spasm. Grating and cracking may be perceived on palpation or on ausculation.

Heberden's Nodes manifest themselves as small hard nodules on the sides of the terminal phalanges, not painful, as a rule, except during the process of formation. They are accompanied by lateral distortions and slight flexions of the end phalanges.

(To be continued.)

MILITARY SURGERY.

By GUSTAVUS M. BLECH,
CHICAGO.

III. Special Part.

XII.

Gunshot Wounds of the Head.

Military wounds and injuries of the skull and brain form the most interesting but also the saddest chapter of military surgery. The importance of the brain from a physiologic point of view, the inability of that delicate and intricate viscus to resist infection, differing in this respect from the peritoneum, make brain surgery a formidable task even under the best possible conditions in civil life, what, then, may be expected from surgery in the field under the difficulties of a campaign!

It has been estimated that about one-half of those who die on the battlefield owe their deaths to gunshot wounds of the skull and brain, and naturally so, for, even while fighting behind cover soldiers must expose their heads while aiming at the enemy or making observations. In so-called standing trenches the head is the most exposed part of the body and therefore the most exposed to shrapnel bullets and shell fragments.

From a purely therapeutic point of view, gunshot wounds of the skull and brain represent a burning problem, while with practically all other injuries a certain conservatism in operative therapy has proved the most successful course. Here operative indications, if life is to be saved, are pronounced, and, what is still more important, active intervention must be accomplished very early, within the very first day, which in turn involves the problem of sanitary tactics and transportation of the wounded.

The Scalp. Only a few words are necessary to devote to wounds of the scalp; provided, of course, neither the skull nor the brain are involved. Practically all gunshot wounds and such produced by cold weapons show gaping margins, but all that is required is a simple, aseptic dressing, such as is to be had with the regulation first-aid packet. Their prognosis is excellent. Undoubtedly the majority of such wounded require no further attention, except a change of dressings after two or three days. A few hours of rest and a little refreshment may be appropriate occasionally, before the patient is ordered back to the firing line.

Skull and Brain. We must discuss both together for the simple reason that injury to the former, even under the most favorable conditions, usually means some involvement of the latter. Trauma of the skull, if it does not produce a lesion of the brain, as a rule, produces either concussion or compression, or both. Of course all three conditions may be present in one and the same individual.

Concussion of the brain—commotio cerebri—will inevitably follow trauma, of such intensity as produced by any missile, even if the brain has not been reached. A blow from a saber or butt of a rifle, whether the skull is fractured or not, too, will produce commotio cerebri.

Compression can occur only when the skull has been fractured in a manner that a fragment or fragments press against the brain, from hemorrhage and from a foreign body.

Diagnostically it is of great help to remember that a fracture will produce the well-known phenomena of brain compression at once, while hemorrhages become apparent *after* a free period, the symptoms coming on rather gradually. The same holds good also for missiles lodged in the brain.

It requires no special proof that the surgeon in the field is likely to encounter any and all of the well-known "symptoms" of brain lesion in all forms and gradations. Partial or complete loss of consciousness, vomiting, Cheyne-Stokes syndrome, paresis, paralysis of any or several organs (locomotion, bladder, rectum), slow pulse, mania, melancholia, cortical epilepsy, deafness, blindness, aphasia, etc.—they all form subjects of great interest, and with which, I may assume, the reader is familiar enough to require more than mere enumeration.

Of special interest to military surgeons is infection following brain injuries, expressing itself into a diffuse, rapid and fatal leptomeningitis.

Let us glance now at the character of the wounds likely to be produced by missiles.

The reader is referred back to the installment in the previous issue, Section X. What has been said there applies fully to the skull.

Depending on the range, direction of the missile, and part struck, we will observe mere "furrows" of the skull (these are referred to as "tangential" shots, though "grazing" shots, in my opinion, would better designate a wound of that type), penetrating wounds, with a wound of exit or, with the bullet lodged somewhere in the brain.

At close ranges entire portions of skull and brain may be blown off, skull and brain may be extensively shattered, while at long ranges the trauma to the skull may not be strong enough to produce more than a slight contusion of the bone and its coverings and a correspondingly mild concussion of the brain.

I spoke in the previous issue of "explosive" effects

in organs containing liquids being the result of hydrodynamic laws.

There seems to be a variance of opinion on this subject among authors, and certainly little appreciation of the entire subject by civilian surgeons, even by several volunteer medical officers with whom I had occasion to discuss the effects of modern missiles on structures containing semi-solid viscera.

I believe that certain experiments by German authorities, will set at rest any doubts that may still be held by prejudiced minds.

These experiments in brief are:

A cylindrical vessel of tin or lead, either empty or filled with sand, is shot at from a close range. The result will be a hole of entrance and a hole of exit, with no further damage to the walls.

The same vessels filled with water or some semi-liquid substance and shot at in like manner, will be rent asunder and the walls bent outwardly. Bend the walls back into the original position and the hole of exit can be plainly located.

Now in the above experiments the results were the same whether the vessels were sealed all around or whether the top was left open. This fact, which, by the way, has been verified by careful experimenters, is decisive for the particular mechanic theory, if theory it should be called, responsible for the "explosive" effects of modern projectiles.

Several authors have ascribed the destructive effect of a close-range shot on a sealed vessel, filled with liquid or a semi-solid substance, to "hydraulic" pressure. What they really meant, if we accept the standard definition of hydraulics, is hydrostatic effect. Water or water containing substances cannot be compressed, hence when a modern bullet enters the closed vessel the displacement of the contents forces the walls asunder in all directions, front, rear, top, bottom, etc.

Basing on this theory they look upon most parts of the human body, even muscle-groups, as a "closed vessel" in which the contained liquid elements produce hydrostatic pressure.

This is absurd. We have already seen that vessels filled with water and left open on top are affected just the same as closed vessels. Why does not the liquid escape from the top where there is practically no resistance whatever. Surely no one will believe that the pressure from the air on top of the liquid surface is equivalent to that exerted by solid metal?

There is, therefore, but one conclusion: The energy of the bullet is transmitted to the contents, which in turn affect the sides of the vessel. The open vessels, the fact that a hole of exit is invariably found, showing that the bullet passed through before energy was radiated through the contents, unquestionably sustain the hydrodynamic laws, as already alluded to in the preceding installment of this serial.

This correct interpretation is, of course, applicable to all viscera and organs containing liquid.

The reader will now recall that I did not unequivocally subscribe to the teaching of the "humaneness" of the modern jacketed bullet. Leaving aside the assertion of some writers that to speak of humane wounds means an absurdity *per se*, while we admit that the modern jacketed bullet produces cleaner and less ragged wounds, especially of the musculature and long bones, the tremendous velocity and therefore greater energy affecting the human body hydrodynamically certainly offset the older bullets with greater mass and lesser velocity.

It is impossible, of course, to enter into a detailed description of all conceivable bullet wounds of the skull and brain. I can, at present, do no more than allude to them and their phenomena. It is hoped in the near future to devote a special monograph to this subject and much technical information, if the statements above made are borne in mind, can be had from standard treatises on surgery. What is of especial interest to us is the great question, what to do therapeutically.

A correct diagnosis is *conditio sine qua non.* This, however, is no easy matter in many instances, as even with pronounced focal and general phenomena, an exact diagnosis of brain lesion is not always possible. Fortunately the Roentgen rays have greatly enhanced our diagnostic prowess, but, unfortunately, the rays are available only at rear institutions.

I shall endeavor, therefore, to briefly review the therapeutic indications of skull and brain injuries, with a view of making clear the military contingencies.

At I. everything depends how quickly the field hospital (II.) can be reached. To arrest hemorrhage and to prevent infection—these are the main duties of the surgeons closest to the firing line. Both require an aseptic compression dressing. This dressing should be applied by a skilful hand, for, loosening of the dressing during the transport means to expose the patient to further hemorrhage and infection.

Supposing it is diagnosed that an individual suffers from compression due to intra-cranial hemorrhage. Shall the surgeon at I. trephine, open the skull and ligate, say, the middle meningeal? Theoretically, this is a life-saving operation, but practically it cannot be successfully executed there. In such cases the great aim is to get the patient to

the field hospital as quickly as possible. The surgeons at I. should not even attempt the removal of splinters, except they lie loose and superficial in the open wound, easily removable by an ordinary pair of dressing forceps.

Do not touch nor remove prolapsed brain—dress. Of course gross particles of dirt can and should be removed by forceps. The only other thing that is in place here is loose tamponade of the ears and nose in case of hemorrhages from basal injuries.

The problem of transportation is complicated. Some patients can walk, though blind, if properly led and supported. Those who must be carried on stretchers must have the heads supported, to avoid jarring. This may require fixation dressings. In wounds of the occipital region the prone position on the back may be absolutely impossible and the patient must be transported on his abdomen.

Delirious and maniacal patients should be strapped to the litter.

Before transportation morphine should be given hypodermatically.

Supposing the field hospital cannot be reached, and the patient is taken up at the ambulance dressing station—what, if anything, can be done there?

(To be continued.)

DIARRHEA IN INTESTINAL GROWTHS.

The diarrhea which results from the presence of malignant growths oftentimes occurs long ahead of the pain symptoms because of the presence of the growth acting as an irritant, increasing the blood flow to the parts with increased water elimination and, at the same time, stimulating peristalsis so as not to give time for intestinal contents to remain long enough in the colon for absorption of liquid elements by the blood stream.—G. M. LINTHICUM in the *Maryland Medical Journal.*

A SIGN IN ACUTE APPENDICITIS.

In October, 1912, I began to notice a marked state of congestion of the right superficial circumflex iliac vein in cases of acute appendicitis.

At first I thought this might be merely a coincidence, but its regular appearance when I was on the outlook for it makes that extremely unlikely; in fact, I have never failed to find it in my own cases, and the senior house surgeon at our infirmary reports that he has always seen it in the cases coming under the care of my colleagues. Therefore I think it must be nearly always present and distinguishable.—JOHN BLAIR in *The British Medical Journal.*

THE SYMPTOMS OF THE PATHOLOGICAL LINGUAL TONSIL AND ITS TREATMENT.

HAROLD HAYS, A.M., M.D.,
Assistant-Surgeon in Otology, New York Eye and Ear Infirmary, Etc.,
New York City.

The great amount of lymphatic tissue which composes Waldeyer's ring-tonsils, lymphatic tissue in the naso-pharynx, and lingual tonsil, protects the body against the invasion of numerous bacteria. This is particularly so in early childhood, when the resistance of the individual is not as great as it becomes later on in life. These lymphatic structures are constantly absorbing pernicious organisms, the result being that in the course of time their work becomes so strenuous that they become hypertrophied and often useless. The normal tonsils become enlarged and diseased; the lymphatic tissue in the naso-pharynx forms itself into obstructing adenoid masses, and the lingual tonsil situated at the base of the tongue, and meeting with its share of the hard work of the invading forces, also becomes hypertrophied to such an extent that it causes many symptoms.

It is only within the past few years that we have become cognizant of the fact that there is or can be abnormal masses causing symptoms, situated at the base of the tongue. Of course, cases have occurred where the masses have been so protuberant in this position that they could be seen with the naked eye. I refer particularly to thyro-glossal and abnormal masses of thyroid tissue in this vicinity. But the determination as to whether the hypertrophy of the lingual tonsil (tongue tonsil) in this position, and whether or not the removal of this mass will cause a cure of certain definite or indefinite symptoms, has been unusually difficult.

A certain amount of lymphatic tissue at the base of the tongue is normal, just as a certain amount of lymphatic tissue in the naso-pharynx is normal.

As a rule the lymphatic tissue in the lingual tonsil does not develop as early as that in other parts of the throat, and, according to Johnson in a very extensive article on this subject, the minute anatomy is different. "The lingual tonsil contains numerous mucous glands and albuminous fluid not to be found in the other tonsils. Many of the crypts of the lingual tonsil are lined with columnar ciliated epithelia.

"It is reasonable to conclude, however, that the chief function of the lingual tonsil as well as that of its neighbors, the pharyngeal and faucial tonsils, is one of protection. They are placed at the entrance of the respiratory and digestive tract, as a

barrier to ward off infection, and while in a normal state, and capable of doing their duty, they should not be interfered with, but when they become diseased, these harmless organisms of protection can be changed into dangerous organs of infection." (The Lingual Tonsils in Health and Disease—John H. Johnson, *Journal of Ophthalmology and Oto-Laryngology,* November, 1912.)

The amount of hypertrophy of the lingual tonsil that takes place as a rule, is not of as much significance as the fact that these tonsils are placed in an extremely dangerous and annoying position. They seldom reach a large size, often more than 1 or 1.5 cm. in width and length and perhaps 2 or 3 mm. in thickness. Of course one frequently meets an exception to this rule. Placed as they are on either side of the median line, at the base of the tongue, in front of the epiglottis, they produce a feeling of fullness and thickening in the throat, and at times push the epiglottis backward over the vocal cords to such an extent that full respiration is obstructed. It is unnecessary to go into details of the minute and gross pathology, for neither is of any importance except in those cases where the gland has increased to such a size that there is some suspicion of malignancy or aberrant growth, *i. e.,* thyroid or congenital tissue.

Among the most important symptoms that result from hypertrophy of the lingual tonsil are chronic rasping cough, a feeling of a foreign body in the throat, a tickling sensation in the throat, impaired respiration and a tendency toward nausea, particularly in the morning. Any of these symptoms can be caused by other conditions and oftentimes, patients have gone from one physician to another and have been thoroughly examined without getting any relief. Very often the lingual tonsil has been overlooked.

Often patients have been told that the symptoms in the throat have been due to some nasal condition with a resulting naso-pharyngitis and the constant hawking of mucus from the back of the throat. It is possible that such conditions in the naso-pharynx may cause the starting of the hypertrophy of the lingual tonsil. It is unwise under these circumstances to promise a cure simply by the removal of the lingual tonsil when the naso-pharyngitis still exists.

During the past few years, I have had occasion to remove the lingual tonsil in many cases where there has been a persistent irritating cough, and in almost every instance where there was no complicating condition, the cough has disappeared. About five months ago a patient came to me complaining that she had had a persistent rasping cough, continuing all day and interfering with her sleep at night and so distressing at times that it made her vomit, whatever food she took. She had consulted other specialists, one of whom had gone so far as to insert a direct laryngoscope. From a consultation with her family physician, I was convinced that she had no organic trouble and although the cough sounded a great deal like that accompanying aortic stenosis, an hypertrophied lingual tonsil was found and I assured her that I thought that this was the sole cause of her trouble. A few days later a large mass of lymphatic tissue was removed from the base of her tongue, and I was very happy to be assured by her, four months later, that her cough and other symptoms had disappeared entirely.

Patients such as these suffer a great deal of agony and their lives are made miserable; others not only suffer from cough but from a peculiar resonance of the voice. I operated upon a singer recently who had a certain rasping quality to the voice which entirely disappeared two weeks after the removal of the lingual tonsil. Many a case of globushystericus is found to be caused by an enlarged lingual tonsil, the symptoms disappearing after the removal of this gland. In some cases a suspicion of tuberculosis has been entertained on account of the persistance of the cough and the resulting tracheitis.

There are no more grateful patients than those who find themselves entirely relieved of their symptoms, after this hypertrophy has been removed.

The diagnosis of hypertrophy of the lingual tonsil is exceedingly simple. For one who is at all familiar with the normal throat and who can use a laryngeal mirror with any dexterity, there is no trouble in determining whether or not there is an abnomal mass of lymphatic tissue at the base of the tongue. One cannot often decide the exact size of this hypertrophy by looking in the throat mirror, because the mirror magnifies the parts under inspection. Once the determination is made that this gland is enlarged, removal should be considered.

Means other than operative have been advised for diminishing the size of the lingual tonsil, but except in very old people with hardened arteries, or in hemophiliacs, or when the patient will not allow an operation to be performed, no conservative treatment should be tried, for it is almost useless. One can attempt to temporarily reduce the size of the organ by means of cauterants, either chemical or thermic, particularly in those cases where telangiectases are present. However, I have operated on a patient with a small nodular thickening of the lingual tonsil who was seventy years of age without any ill result.

The simplest way to remove the lingual tonsil is by means of the Myles' lingual tonsillotome. The

base of the tongue and surrounding parts must first be thoroughly cocainized, and then, after the patient is told how to properly hold out his tongue, one should have the parts under direct inspection with a laryngeal mirror. Operative work is done best when the operator stands over the patient. The tonsillotome is brought over the growth, and as soon as it is in position the mirror is withdrawn and pressure is made firmly with the fingers of the other hand at the tip of the instrument. If this is not done, the cutting part of the instrument will invariably slip from and over the growth and nothing will be removed. Considerable bleeding attends the operation and often this will not stop sufficiently for one to get another inspection of the throat in order to see if any of the mass still remains. As the hypertrophy is bilobar, it is absolutely necessary in many cases to insert the instrument a second time and under no circumstances should this be done unless one can see every part. I had the unfortunate experience at one time to take off about one-half of the epiglottis by the instrument slipping out of position. Fortunately this did no harm to the patient. If the bleeding is too profuse to be stopped at one sitting, it is far better to finish the operation another time.

The after-treatment of this operation needs very little comment. The patient rests for twenty-four hours, is told to take cold food and keep cold clothes or an ice bag around the neck, and he should be seen for the two subsequent days. At this time the throat should be cleaned out thoroughly and the inflammation allayed as far as possible with emolients. As a rule the pain is entirely relieved at the end of the third day.

As hacking cough is most often caused by throat conditions and as many patients are not relieved by the usual procedures, it is wise for the general practitioner particularly to realize that the lingual tonsil may not be accountable for all the trouble. Investigation of this mass of tissue should be particularly sought for in that class of cases where the patient has a "lumpy" feeling in the throat, and where the cough persists for a great length of time. The operation for the removal of the lingual tonsil is very simple and the results are exceedingly gratifying.

11 West Eighty-first Street.

Do not forget that secretions from an ulcer can cause an eczema in the neighborhood, and that an eczema may cause ulcers in the leg.—*Bernays' Golden Rules of Surgery.*

THE TREATMENT OF UNCLEAN WOUNDS.

FREDERICK-EMIL NEEF, M.D.,
New York City.

The same principles that hold good for the clean wound which is inflicted by the surgeon in an aseptic operation, are followed in treating the ordinary incised wound of an emergency case. Moisture is congenial to bacterial growth; and clean wounds heal best when they are kept dry. Wounds received in industrial accidents are usually more or less soiled; but the contamination is germless, or at least in most instances, contains no *pathogenic* organisms. When the grime, filth, dirt, tar, paint, axle-grease, and the like have been removed from a laborer's injured hand, it is not common to see healing take place by first intention. A little free bleeding from the cut surface may be the best lavage the wound can receive. Thorough, but gentle rinsing with warm boiled water, is an added precaution. The wound is dried gently, strapped, clamped, or sutured, according to the indication, and a dry sterile gauze dressing is sufficient.

If, however, contrary to the impression conveyed by the history of the accident and the appearance, character, and location of the wound, after a few days have elapsed, local redness, tenderness, infiltration of the edges, bacterial discharges, or even perhaps, definite constitutional symptoms, such as headache, malaise, fever, show it to be infected; the plan of treatment for unclean or septic wounds is instituted at once. In fact, whenever the character of the wound appears *doubtful*, it is an old but good-working rule to treat it as if it were infected until its subsequent behavior gives assurance that it is clean. The wound is held agape, and, after thorough rinsing, drains are introduced and in contradistinction to the treatment of clean wounds, a *wet, mildly antiseptic* dressing is applied.

Tissue-disinfection, that is, destruction of bacteria by powerful germicidal solutions, such as formaline, carbolic acid, bichloride of mercury as it was formerly practiced, should be abolished in the routine care of unclean wounds. It is a different matter when there is reason to suspect inoculation with a dangerously pathogenic organism such as the tetanus bacillus, as when garden-earth or soil has been introduced into the wound. Here local sterilization must be attempted even at the risk of considerable loss of tissue. The electro-cautery needle or Pacquelin point are probably most efficacious; next in order, disinfection with pure carbolic acid, which is subsequently limited in its action by the application of alcohol. In either case tetanus antitoxin is injected circularly about the wound, after a

large dose—not less than 150 units—has been administered intramuscularly in the gluteal region.

From a practical point of view it is convenient to think of three stages in the healing of unclean wounds. Firstly a *stage of infection,* during which the bacterial growth is progressive, the local inflammation more or less acute. Secondly, a *stage of expurgation;* the extension of the infection has ceased, acute symptoms have subsided and the discharge becomes copious. Thirdly, *the stage of aseptic healing,* when a clean, granulating surface appears.

If, during the *stage of infection,* the defensive reaction is marked and the inflammation is acute the logical treatment is *sedative.* The most useful of sedative measures in this instance, is the moist, mildly antiseptic dressing. Evaporation of the moisture abstracts heat, cools the surface, and makes the patient more comfortable. In general, water which has been modified by the addition of a mild antiseptic, has been used for such dressings because unmodified water has no inhibiting attributes and might prove to be congenial to bacterial growth. How well this practice is founded is difficult to say. At any rate, very mild antiseptics such as a one to three per cent aqueous solution of boric acid, while still unfavorable to bacterial development, are, at the same time, in contradistinction to stronger antiseptics not particularly harmful to the living tissues with which they come in contact. But the gauze dressing must not be allowed to become dry if its antiphlogistic effect shall be prolonged. A large dressing remains moist longer than a scanty one. When frequent renewal of the dressing is out of question, because it is impracticable, as in the large number of dispensary patients; the dressing may be kept moist in the intervals by the external application of weak solutions of boric acid, borosalicylic acid or aluminum acetate. Another method is based on attempts to retain the moisture by restricting surface evaporation—the wet gauze is covered with rubber tissue or other material which is impermeable to air. To me the correctness of this procedure in the case of an acute inflammation is not thoroughly apparent; for not infrequently, instead of being antiphlogistic and sedative, such a dressing on its removal is found to be warm and distressing from the retention of heat and foul exhalations.

If, during the stage of infection, the defensive reaction is sluggish, the inflammation is subacute or chronic, measures tending to awaken greater healing response, *stimulant* procedures, are in place. In this connection, the stimulant effect of chemical substances, as well as that of physical agents upon living tissue has to be considered. With chemical substances the stimulation may even, to some degree, be selective. Thus, various aniline dyes are used to stimulate epithelialization; while gauze, impregnated with red wash, and similar solutions, for example appears to influence more specifically the connective tissue containing granulations, which make up the body of the wound. More recently experiments on tissue hyperplasia and tumor genesis have brought to light the fact that innumerable chemical bodies may act as tissue activators.

No doubt the relative inconvenience of applying certain physical agents, such as dry heat from electric lamps or baking, has been in the way of their wider adoption in the treatment of sluggish wounds. In the main, the utilization of dry heat is more in accord with the general principle, that the healing wound should be kept dry. Here the maceration which is produced by wet procedures, sometimes proves to be an undesirable complication. Thus the stimulant, poulticing effect of a moist dressing covered with rubber tissue, in conjunction with prolonged hot bathing of the part, is contraindicated in the treatment of a wound in the diabetic patient. Moreover, in every instance, it must be borne in mind that where the diminished healing-activity is due to a constitutional cause, no amount of local stimulation alone, even after the wound has become clean, will suffice to bring about a better healing response. Furthermore, there may be a regional peculiarity, as in varicose veins of the legs. When a wound is inflicted in the compass of the pigmented area, it does not heal readily because of the pathological vascular condition of the part. Tissue activators, or physical agents, can contribute very little towards wound-healing if the other, more important measures, directed towards emptying the capillary veins, are disregarded.

With the arrest in the further progress of the infection, the defensive reaction begins to dominate, and the wound discharge becomes more copious. Wound-discharge is the result of an effort of the wound to expurgate itself. It represents the mass of demarcated and softened tissue about the bacterial focus—a germ-laden, fluid debris which should not remain occluded. Its presence excites exuberant granulations which disappear when the wound is kept clean and dry. When the wound is shallow, and above all, when the wound-discharge is scanty, there is no dressing which is better adapated to bring the wound into a healthy condition than plain, dry, loosely woven, aseptic gauze. Occasionally, for practical reasons only, when a wound cannot be dressed as soon as it should be, or the discharge decomposes with exceptional readiness, a dry *antiseptic*

gauze may be substituted for the aseptic dressing; or, a dry deodorant gauze, when the discharge is foul and disturbing to the patient.

When, however, during the stage of expurgation of the wound the focal accumulation of pus is more or less deep-seated, and the discharge is profuse, the gauze drain is often of itself unsatisfactory for the purposes of drainage, and adjunct measures become necessary, such as the use of the wound-wedge, rubber tubes or loop-drains of wire or metal The reason why dry gauze when employed as a drain is not trustworthy of this instance is because its fine meshes are rapidly clogged by the inspissating discharge. Thus, not infrequently, what was intended to facilitate drainage really impedes it by closing the wound-outlet like a stopper. The clinical picture is that of retention, and when the gauze is removed the incarcerated pus pours from the wound. Since the inspissation of the discharge in the dressing is due to the evaporation of its water content, it is true, gauze drainage can, where this is indicated, be promoted either by excluding the air by means of rubber tissue to prevent evaporation, or by the external application of moisture—methods which are, however, far from being ideal. In *large* wounds this difficulty is overcome by the introduction, in conjunction with the gauze, of two or more soft rubber tubes with a number of lateral openings. In *small* wounds the problem assumes a different aspect. In order to preclude retention in these cases a twirl of gauze or rubber tissue may be placed in one angle of the wound. This is intended to act, not as a drain in the strict sense of the word, but rather as a *wedge* which keeps the wound open. Unfortunately this procedure promises more in theory than its adoption actually merits in practice. The small incision is apt to collapse at the side of the drain; perhaps before the bandage is applied there exists some uncertainty whether it has not already been dislodged by the premature activity of the awakening patient. It is essential that a device for keeping small incisions, wounds and sinuses patent shall not only be slight in bulk so that it does not obstruct the path of the discharge, but also of such construction that it can be applied with precision and is not easily displaced. There is a large class of cases in which the insertion of a drain according to the usual methods is thoroughly unsatisfactory; of these the unfortunate with a suppurative tenosynovitis and many small incisions in the hand, is but one example. A simple, practical method of draining such wounds consists in the introduction into the wound to the desired depth of loop-drains of thin, flexible metal.

These drains are nothing more than variously shaped metal loops with flanged ends. The loop is inserted into the recess to be drained and keeps it open by virtue of the spring-like action of the metal. The grooved flange-ends grasp the margins of the incision and retain the drain in place. It is practical to keep various sizes sterilized and in readiness for use. Also some narrow strips of metal ⅛ inch wide and upward, in case an anomalous cavity requires that one be improvised. This is easily done if the material is thin commercial "tin." All that is needed for this is a straight scissors and an ordinary pair of thumb forceps—instruments which are at hand at every dressing. A long, bent loop-drain of metal strip or wire may be needed for a sinus which is difficult to drain and treat from the bottom. With one properly applied it is easier to irrigate the sinus and to introduce disinfectant, antiseptic, or tissue-activating fluids. When a fluid is to be retained in the sinus it is less difficult to insert a plug into the opening between the metal flanges. In applying the drain the loop is simply closed by nearing the flanges to each other, and introduced into the wound by means of the thumb forceps. The loop is then opened until the margins of the wound are sufficiently retracted by the flange-ends.

The rubber tube as well as the metal loop-drain both *serve the purpose of keeping the wound open*, while the gauze dressing itself, by virtue of its capillarity absorbs the discharge as it escapes from the wound. In some regions, as, for example, in the ischiorectal, it is exceptionally important that the draining wound be widely open lest the pus burrows in various directions from its original focus and ischiorectal sinuses and fistulæ result.

In an appendicitis abscess, when the patient, as is often the case, lies on the back, it is the *chemical tension* alone that causes the pus to rise in the wound or in the rubber tube which has been inserted into it for drainage. In this instance the wound-discharge rises *against* gravity until the wound is filled, when it overflows into the gauze dressing. If the tube which was intended to help drainage projects more or less *vertically* beyond the wound as such drains generally do the pus which it contains is simply occluded, and cannot even escape by overflow, since the end of the tube is above the niveau of the pus in the wound cavity. In other words, under such conditions, the tube, instead of being helpful, is actually a disadvantage in drainage.

It is clear from this consideration that drainage produced by chemical tension alone is *a drainage by overflow and not a drainage from the bottom of the wound*. Chemical tension alone, therefore, is insufficient to keep the wound dry. Should it now be possible to change the existing conditions so that

the forces of gravity may aid chemical tension, the problem of evacuating the residual pus will find a simple solution. Thus, if an ordinary bottle with a constricted neck were to represent the abscess-cavity, and the water in this container, the discharge, the easiest way of emptying it is plainly by allowing the force of gravity to act *directly*; the bottle is turned so that its neck descends below the fluid level. Similarly, gravity may be made to assist drainage when the wound-opening is brought to a lower level by *postural changes* of the patient. When this is done, the rubber tubes which were previously defunct begin to drain the recesses into which they have been placed; the drainage, instead of being simply by overflow, takes place from the bottom of the wound.

It is because of the prime importance of gravitation in the expurgation of the unclean wound that, unless anatomically or otherwise contraindicated, the surgeon always opens and drains a suppurating cavity at its most dependent point. Unfortunately the force of gravitation cannot always be made to influence drainage *directly* by low incision or the requisite postural change. In such a case, particularly when the cavity is deep and discharges profusely, *removal of the residual pus by drainage in an uphill direction* must be considered.

First of all come the methods by which this is attempted by *continuous siphonage*. The laws underlying drainage by siphonage can be illustrated by means of a bottle containing water and a long drainage tube. As the tube rests upon the edge of the bottle, one end immersed in the water, while the other is outside, an ascending limb within and a descending limb of the drainage tube without may be distinguished. But in spite of the fact that the end of the descending limb is considerably lower than the level of the fluid within the bottle, no drainage takes place. Suction, or more accurately speaking, the production of negative pressure within the tube sufficient to raise the column of water to its highest point over the edge of the bottle, is essential to start the flow. When the water has once reached the descending limb, it readily escapes by gravitation. But the gravitating column produces renewed suction behind it, which causes a second charge of fluid to rise in the tube. Thus siphonage, once instituted, may continue indefinitely until the bottle has been emptied of its contents. If, in such an experiment, the tube is replaced by a piece of gauze, similar observations may be made. The drain may remain indefinitely without causing a flow of fluid from the bottle. The capillary attraction of the gauze alone is insufficient to carry the water to a point where gravity can begin to act. If, however, suction is started by pouring water down the descending limb, siphon-action can be initiated which continues until the bottle is empty. Unfortunately, these laws of drainage, striking as they may be in the experiment, have but a very limited application in surgical drainage. Most devices in which siphonage is produced by running water, or by means of an interpolated rubber bulb, or large reservoir from which the air has been exhausted, and which have for their object *continuous* drainage in the strict sense of the word, are anything but practical. The ordinary suction cup, it is true, may be kept on a discharging wound for a long time; but its action becomes feeble as the vacuum disappears. It is really better adapted for inducing local hyperæmia than for encouraging drainage. In practice, therefore, the disposal of the residual pus in instances in which up-hill drainage cannot be avoided, resolves itself into efforts at repeated and thorough *evacuation at the time of the dressings* by means of one of two simple methods, either *suction* or *expression*.

In the *expression method* the accumulated discharge is emptied by gentle compression and manipulation of the pus undermined territory, by means of the fingers of the gloved hand. When properly carried out it is unattended by any traumatism to the wound. In contradistinction to the suction method, it has the great advantage that it is simpler in execution and no special apparatus is required. The notion that pus may in some way be forced into the blood vessels by this procedure is erroneous. With all its simplicity it is none the less efficient. It is applicable nearly everywhere where the tissues can be grasped or manipulated with the fingers, and the surface structures are not too rigid and unyielding. In the treatment of the nontuberculous submaxillary abscess which is so common among the improperly cared for children of the poor under three years of age and is due to pyogenic infection from the mouth, the use of the expression method is typically illustrated. A little ethyl cholride sprayed on the mask or a few drops of Anesthol or of ether, just sufficient for a primary anesthesia; a small incision through the skin parallel to the natural folds in the neck and over the fluctuating point or the spot of greatest softening; penetration of the soft parts and abscess-wall bluntly by means of a small forceps, while the tissue is fixed between thumb and fingers of the left hand; separation of the blades of the forceps to widen the opening into the abscess cavity; simultaneous compression or "milking" of the infiltrated area from without, until no more pus appears; insertion of a metal loop-drain to keep the small opening patent; a large dressing of loose sterile gauze. If expression has to be repeated one or more times

at subsequent dressings, this can be done without causing much pain, because the inflammation is no longer acute, as when the abscess was first incised; neither does a forceps have to be introduced into the wound, because the drain keeps open the way for the escaping discharge. In this procedure, the *protective lining of the abscess cavity is conserved* as far as possible; indeed, the use of the curette within *any* abscess-cavity is obsolete.

The *suction method* varies widely in its application in the hands of different surgeons. It seems vital, that whatever device is used for this purpose, the degree of suction can be regulated at will; for, in the ordinary suction-cup the vacuum is soon destroyed. A serviceable mechanism can be improvised by pushing one end of a rubber tube which is about eight inches long and has an internal diameter of about an ⅛ of an inch, into the open connecting arm of a small glass suction-cup; while the other end is slipped over the *air-inlet* arm of an ordinary suction-pump, such as is used, for example, to create a vacuum in the flask of a Potain apparatus for aspirating the chest. The *air-outlet* arm is left open. The most useful cup for routine work is one which measures about two inches in diameter and has the shape of a miniature ball-jar (F. A. Eschenbaum, Bonn). The suction-pump itself is all metal, and every part of the apparatus, tube, cup and pump can be sterilized by boiling with the dressing instruments. The nurse manipulates the pump while the suction-cup is held snugly applied to the surface over the wound from which the pus is to be exhausted. The skin becomes hyperæmic, is drawn into the cup, and as the vacuum is intensified by continued pumping, the discharge begins to flow from the orifice of the wound. In an unclean post-operative case where the sutures have become infected by the staphylococcus, for example, considerable yellow, odorless pus is at first obtained, two to four ounces perhaps, while later the wound-discharge becomes scantier, thin and serous, and shreds of sloughing fascia or the black knots of chromicized catgut partly digested, may be observed to pop through the small drainage opening in the incision-line into the negative space, under the powerful influence of the suction.

When finally an unclean wound has expurgated itself, the discharge has ceased or is scanty and sterile, and a healthy, granulating surface presents itself, the *stage of aseptic healing* has been reached, and closure of the wound by apposition may be attempted in the hope of securing union just as in the cases in which the wound was clean from the beginning.

300 Central Park West.

A NOTE ON THE USE OF THE TACK IN PLASTIC SURGERY.

By J. F. BALDWIN, M.D.,
Surgeon to Grant Hospital, Etc.,
Columbus, O.

A number of years ago, in the "Spice of Life" column in some paper, I read an account of an undertaker who asked the widow for some mucilage with which to fix in place her husband's wig. When she brought it to him a few minutes later he blandly remarked to her that he did not need it now as he had "found a tack." I smiled at the conceit, but sometime later, having difficulty in adjusting the parts in a plastic operation on the face, I bethought myself of the suggestion and called for some tacks. With these I was able to put the parts in excellent position, and retain them, and the result was exceedingly satisfactory.

I have resorted to this maneuver in quite a number of instances since then. The tacks should be sharp, and preferably of steel. Steel pins, such as the ladies use, answer admirably. They can be readily driven into the bone firmly enough to hold, and being extracted a few days later no scar remains. Perhaps others have used this same device, but it was new to me.

CONCERNING BELTS AFTER LAPAROTOMY.

Unless there has been drainage or a deep infection of the abdominal wound, no support is used. It would seem that the prescribing of belts following a clean case implies a lack of confidence in the work we have done. After a fracture has united would we use a splint for months following? Decidedly not, on account of the resultant atrophy of the muscles. Then why use a splint to the abdomen when healing has taken place? Here also would we have atrophy of the muscles following the use of belts, thereby predisposing to the very condition we seek to prevent, hernia. If a fascia has been approximated properly, and no infection has occurred, there will be no hernia.—J. DAWSON WHITALL in *N. Y. Medical Journal.*

There are two types of sarcoma common in the lower part of the thigh or at the knee which do not call for amputation of the limb: one grows from the fascia or periosteum, and one from the bone—the fibrosarcoma, and the myeloid or giant-celled sarcoma.—Bernays' Golden Rules of Surgery.

American Journal of Surgery

PUBLISHED BY THE

SURGERY PUBLISHING CO.

J. MacDONALD, Jr., M.D., President and Treasurer

92 William St., N. Y., U. S. A.

to whom all communications intended for the Editor, original articles, books for review, exchanges, business letters and subscriptions should be addressed.

SUBSCRIPTION PRICE, ONE DOLLAR
FOREIGN, SIX SHILLINGS

Original Articles and Clinical Reports are solicited for publication with the understanding that they are contributed exclusively for this journal.

It is of advantage to submit typewritten manuscript; it avoids errors.

CHANGE OF ADDRESS. Subscribers changing their addresses should immediately notify us of their present and past locations. We cannot hold ourselves responsible for non-receipt of the Journal in such cases unless we are thus notified.

ILLUSTRATIONS. Half-tones, line etchings and other illustrations will be furnished by the publishers when photographs or drawings are supplied by the author.

SPECIAL NOTICE TO SUBSCRIBERS

The "American Journal of Surgery" is never sent to any subscriber except upon a definite written order. Present and prospective readers please note this.

WALTER M. BRICKNER, M.D., Editor

NEW YORK, AUGUST, 1913.

AN ARRAIGNMENT OF SURGERY.

"In absolute calmness and with no rancor or ill-will, I here do arraign the surgeons of America for needlessly removing the appendix in more than half the cases presented to them; and for needlessly rendering women barren by major operations in more than two-thirds of the cases presented to them, besides depleting the vital forces and injuring the health of women in many ways by serious operations where simpler and more natural methods would have effected a cure."

This arraignment of the surgeons of America by Ella Wheeler Wilcox, in *Good Housekeeping,* July, 1913, is based upon the knowledge of a few cases of error in diagnosis, dogmatism in treatment, and radicalism in judgment together with a sub-conscious feeling that surgery is exploiting womenkind. The fatal error of arguing from a few particular cases to a generalization is again in evidence.

Had there been an opportunity for this gifted woman to read the splendid address by Dr. Homer Gage on Some Abuses of Surgical Practice (*Boston Medical and Surgical Journal,* July 3, 1913), she probably would not have written her indictment in terms that are unsupportable even by adducing data from hospitals or laboratories, or from patients themselves, though she were to take in the entire congregation of the Christian Science Church.

To admit that the safety of modern surgery frequently carries some operators to meddlesome radicalism is not to condemn the general practice of surgery. It has taken many years to ascertain the value of local and general anesthesia with various agents. Lister, Pasteur, Tait and their followers with the development of antiseptic and aseptic technic have produced an era of comparatively safe surgery. As a result, operations have been undertaken freely and possibly with avidity. The pendulum began to swing to the surgical correction of all conditions which previously had not responded to medicine. The pendulum is swinging back. The intelligent surgeon now appreciates that his skill must be subordinated to the justification for surgical interference namely "the relief of suffering, with as little danger, distress and mutilation as possible." Surgical interference should be undertaken only after a most careful and thorough study of the conditions for which relief is sought, of the methods which may be employed to secure it, and by men whose training and experience qualify them to meet intelligently the dangers and complications that may be encountered.

The mechanics of surgery must give way to surgical judgment. Inclination must be subordinated to necessity. The patient is entitled to retain all his organs unless operation will result in the saving of his life, palliate his suffering, or prolong his days of usefulness. Exploratory operations too frequently indicate a lack of clinical study or diagnostic ability. Operative interference may mean merely the line of least resistance. Over-interference in surgery is as dangerous and ill-advised as ultra-conservatism. No operation is without danger.

To lessen the abnormal rush to the scalpel, Mrs. Wilcox makes this curious suggestion: "Any physician who is ready to make a positive statement that an operation is the only escape from death for a patient ought to be willing to put that statement into writing. No man or woman should submit to the knife if his physician refuses to do this. Let us present a law to Congress compelling physicians to put their professional statements into writing. Those who jeopardize life should be ready to risk their professional reputation. The law should protect us from the regulars as well as from the charlatans." The cure suggested would not alter the situation. The blind enthusiast would willingly state his convictions in writing. The greedy, callous, vulture-like, few in number, would still hazard their reputations. The writing would not change the outcome of the operation, nor would it correct human fallibility.—I. S. W.

FETAL MEMBRANES FOR SKIN GRAFTING.

An ingenious and, as far as we know, a new method of, or substitute for, skin grafting was recently published almost simultaneously by Maximilian Stern, of New York (*Journal of the American Medical Association,* March 29, 1913), and Nicholas Sabella, of New York (*Medical Record,* March 15, 1913). It consists in the use of the amniatic layer of the fetal membranes. Derived from the ectoderm, the anmion is composed of embryonic dermal elements, and its employment for "skin grafting" seems logical.

The technique is simple. If the membrane is to be used within a short time, it is carefully washed free of blood and vaginal secretions, with normal saline solution, and bottled in that solution until needed. If the membrane is to be kept on hand for several weeks Stern dries it with sterile gauze, after washing, and stores it in Carrel's petrolatum preservative mixture.

The preparation of the field and the application of the membrane, in strips or segments, is the same as for Thiersch grafts, the glistening, inner surface of the amnion being applied to the wound. Stern covers the grafts with a coating of beeswax, castor oil and paraffin, applied with a brush; Sabella applies fenestrated oiled silk and over this a gauze dressing wet in "decinormal salt solution or Carrel's solution."

Each of these authors report pleasing results. We have noted no subsequent reports from others who may have tried the method. It seems quite worthy of trial. If the grafting of amnion on a granulating wound is as effectual as the Thiersch graft it will surely replace the older method, for its advantages are quite obvious.—W. M. B.

Surgical Suggestions

The employment of narcosis in a case of "stiff and painful shoulder" may reveal a cause not otherwise ascertainable, *e. g.,* subluxation.

Vein-to-vein transfusion possesses over the artery-to-vein operation at least the advantage of sparing the donor a conspicuous scar and the loss of a large artery. With a tourniquet lightly applied to his arm the venous pressure may be made abundant, and the blood flow correspondingly rapid.

The long-used term "congenital hernia," for that variety in which the testicle lies in the sac, is misleading insofar as it suggests that all the other varieties are not congenital. Many types of inguinal hernia are congenital; perhaps all are.

In lumbar kidney operations take pains to protect the ilio-hypogastric nerve. Its division causes paralysis of a considerable area of the abdominal wall and produces a distressing pseudo-hernia. If the nerve is divided in the operation suture it.

To encourage the drainage of pus from the pelvis through an abdominal wound it is helpful to have the patient lie face downward at intervals, preferably with the foot of the bed elevated—but not until two or three days after the operation.

Small epigastric herniae, easily overlooked, are often the cause of pains in this region simulating those of stomach ulcer, gall-stones, etc. Some of these, however, consist only of properitoneal fat without any sac. The treatment of these latter by operation will not always relieve the pains for which a deeper source must, indeed, be sought.

The kidney and upper portion of the ureter may be easily reached by the lumbar route without dividing any muscle fibers. Beginning just below the twelfth rib two or two and a half inches from the spine an incision is made downward and more or less outward to or towards the iliac crest, exposing the lumbar aponeurosis. Divide this in the same line, proximal to the origin of the latissimus dorsi. This will expose the border of the erector spinae, which may be drawn inward, the lumbar fascia and the ilio-hypogastric nerve coursing obliquely on the latter. Divide this fascia just above and external to the nerve, i.e., downward and outward, the incision being easily made to split the sheath of the quadratus lumborum. (It is desirable to bare this muscle in nephropexy.) The perirenal fat is now seen beneath, and the reflection of the peritoneum anteriorly. The appendix can be removed or the gall-bladder palpated through an opening in the peritoneum here. Through this exposure the upper ureter can be reached, or a kidney of fairly normal size delivered. It is not to be recommended for the removal of a large kidney. In closing the wound only two fibrous layers are to be sutured—the lumbar fascia (which is the posterior aponeurosis of the transversalis) and the lumbar aponeurosis.

Surgical Sociology

Dr. Ira S. Wile, Department Editor.

In connection with the general hospital situation in this country it is interesting to note the address of Sir William Osler before the Oxford Hospital Conference as reported in *The Hospital,* July 5, 1913.

As the result of his experience in Canadian and American hospitals, together with his knowledge of general hospital organization, Osler suggests four points of contact necessary to invigorate the British hospital system. It appears strange to Americans that he finds it necessary to advocate giving up the voluntary system of hospital care and establishing the principle of taking pay from patients. In England every care is lavished upon the poor while little is done in affording hospital facilities for those able to give payment for it. The necessity of big private pavilions in connection with general hospitals has been established in almost all countries save England.

With his usual ability to place his finger upon the weak points in hospital organizations, Osler calls attention to the lack of clinical and pathological laboratories in the county hospitals. The facilities for chemical and bacteriological research are distinctly behind the times and this interferes with the proper investigation of disease, preparatory to the exhibition of medicine for its relief. County hospitals in this country are not well provided with laboratory facilities although probably not so lacking as in England, where some of the county hospitals depend upon the laboratories in London for the scientific diagnosis of carcinoma.

As a third point of value, equally in the smaller hospitals of the United States, Osler advocates that there should be a man among the hospital physicians, at least one should be a student of diseases, not engaged in practice, save as a consultant. He recognizes the change from the pure physician which has occurred during the past hundred years. He deprecates the appointment upon hospital medical staffs of two or three physicians or surgeons where one would suffice. To quote his own words, "it would work much better if a hospital, say, of only fifty or sixty medical beds had but one physician and he a consultant. He should even be paid a fixed stipend sufficient to enable him to devote a very large part of his work to medical investigation and the care of the patients. With the development of modern medicine, it takes so much of a man's time for special study and research that it is impossible, if he has to earn his living by taking care of patients in general practice, to keep up to date thoroughly in laboratory methods and in methods of research." Obviously this suggestion contains food for thought for the organizers or controlling boards of our American hospitals. At the present time the attending staff of many hospitals reads like a local medical directory with unfortunately insufficient material to develop the innate possibilities of any of the staff.

The fourth point dwelt upon by this leader in Anglo-American medicine is the importance of utilizing the small hospitals for purposes of instruction. His constructive idea is to establish, once or twice a year, post-graduate teaching which would be conducted partly by the staff of the hospital, and partly by eminent physicians and surgeons invited to attend. Such post-graduate courses as he has in mind would last but a week and would be in form, scope, and plan similar to our own Congress of Clinical Surgeons, which has proven itself of immense value in disseminating knowledge of surgical science and art.

In the plan for correlating our hospital system with our medical institutions, supposedly given over to the practical phases of medicine and surgery, it is important to bear in mind the valuable suggestions contained in this address of Dr. Osler. We have already recognized the importance of medical schools maintaining a well co-ordinated hospital whose staff shall comprise the professorial heads of the scientific and investigating branches of medicine as well as the demonstrators of the practical arts of medicine.

Book Reviews

Diseases of the Stomach, Including Dietetic and Medicinal Treatment. By GEORGE ROE LOCKWOOD, M. D., Professor of Clinical Medicine in the Columbia University; Attending Physician to Bellevue Hospital, New York. Octavo; 624 pages; 126 engravings and 15 plates. Philadelphia and New York: LEA & FEBIGER, 1913.

The author states in his preface that it was his intention to describe the diseases of the stomach as he happened to see them and after one completes reading the book he must agree that the whole work is based on large clinical experience.

Many of Lockwood's conclusions are at variance with others' opinions and will no doubt call for some criticism.

The writer is an admirer of the use of cerium oxalate for the relief of nausea, but it is questionable whether it possesses any therapeutic value. The suggested use of several prescriptions of the "gun-shot" variety, may also be a cause for criticism. We should like to point to an error in the prescription on page 176. It should read 5 minims=gr. 1-12 instead of gr. 1-6.

In writing of the diagnosis of gastritis with normal acidity, the author does not make clear how such can be made. We are pleased with the assertion that the diagnosis of chronic gastric catarrh cannot be made without the use of the stomach tube.

The suggestion that partial or complete gastrectomy be performed for cirrhosis of the stomach will most certainly be opposed by most internists. Moynihan's differential diagnosis of gastric and duodenal ulcer is seriously disputed by the author.

The radiography of ulcer, as a diagnostic aid, is explained in a most satisfactory and concise manner. Everyone must agree that "the physician has no right to expect a diagnosis to be made for him by a radiologist who knows nothing more of the patient than can be learned by the study of the plates."

We must also agree with the author that investigation of surgical statistics shows that favor of intervention in ulcer is not so great as we have been led to believe.

In his "ulcer carcinomatosum," the writer makes a statement which will most certainly be refuted by surgeons, namely, "when lactic acid appears it is probable that the patient has passed the stage in which operation can result in radical cure." In other words, certainty of diagnosis means that it is too late to hope for radical cure.

One must also disagree with the statement that moderate inflation of the stomach is the most accurate means of locating its lower border.

On page 329 the use of Baylis and Starling's *secretin* no doubt was meant and not *secretion*.

Issue must be taken with the statement that in Atony, food stasis does not occur. The use of the old-fashioned term Atony is to be regretted since the term "Diminished Peristole" has replaced it.

We also regret that hyperacidity should be considered a separate entity. It is probably too far-fetched to say that in every case of prolonged or painful hyperacidity, chronic appendicitis must be considered a possible cause even in the absence of definite physical signs.

The whole book is gotten up in a most readable manner except for the arrangement of the different chapters which, in places, shows a lack of sequence. The illustrations of the pathological specimens are exceedingly good while the radiographic illustrations are too good. The latter are so fine, it is to be regretted that the author did not mention the fact that they were touched up for the purpose of reproduction. It is not fair to radiologists other than those mentioned in the preparation of the book.

Owing to the fact, however, that the whole work is based on clinical experience, the book is a valuable acquisition for both internist and surgeon.

An International System of Ophthalmic Practice. Edited by Walter L. Pyle, A. M., M. D., Philadelphia. *Opthalmic Semiology and Diagnosis.* By Charles H. Beard, M. D., Surgeon to the Illinois Charitable Eye and Ear Infirmary, Oculist to the Passavant Memorial Hospital, Chicago, etc. Octavo; 400 pages; 13 colored plates and 71 figures in the text. Philadelphia: P. Blakiston's Son & Co., 1913. Price, $4.00.

This is the third volume of Pyle's System, the two previously published being Pathology by Collins and Mayou and Therapeutics by Darier. In these two works, the London pathologists and the Parisian therapeutist have set a high mark for the well known Chicago diagnostician to reach.

There is no other separate volume in any language devoted exclusively to differential ocular semiology. The nearest approach to a work of this description is to be found in a limited portion of the fourth volume of the French Encyclopedia of Ophthalmology to which the author acknowledges indebtedness.

In this volume are thirteen colored plates and many original drawings all taken from a large collection in color which has been awarded a diploma of honor by the American Medical Association. The colored plates are splendid, and it is a pity that in order to keep down the price of the book the publishers were compelled to refrain from rendering all the reproductions in color.

The classification of diseases is regional and anatomic as regards objective symptoms. The first part includes the lids, conjunctiva, globe, cornea, lens, iris, pupil. Each symptom referable to the particular region is discussed in turn. A surprising omission is the absence of all mention of the symptoms of trachoma and of follicular conjunctivitis. The subject of cataract is excellently and completely covered. The second part deals with the fundus. The chapter on arteriosclerosis is especially worthy of mention.

The Modern Treatment of Nervous and Mental Diseases. By American and British authors. Edited by William A. White, M.D., Superintendent of the Government Hospital for the Insane, Washington, D. C., Professor of Nervous and Mental Diseases in the Georgetown University, Etc., and Smith Ely Jelliffe, A.T., T.D., Ph.D. Adjunct Professor of Diseases of the Mind and Nervous System in the N. Y. Post-Graduate Medical School and Hospital, Etc. *Volume* 1. Large Octavo; 867 pages; illustrated. Philadelphia and New York: Lea and Febiger, 1913.

The task the editors have set out upon is as imposing as it is ambitious. This large volume is merely the first of the series of three of equal size. Judging from its merits we predict an unqualified success for the entire venture. This volume contains 19 essays by different authors and is devoted exclusively to the psychic aspects of neurology. It is difficult within the short limits of a review to discuss in detail each essay. We must content ourselves by saying that we found all we have read of a high order of excellence. We would select as especially commendable "Sexual Problems" by Havelock Ellis, "The Treatment of Neuroses and Psycho-Neuroses" by Ernest Jones, "Symptomatic Neuroses" by E. E. Southard, and "The Treatment of Paranoic and Paranoid States" by Adolph Meyer. The editors are to be commended for the judicious choice of authors. It would be difficult to select more representative experts in the various subjects under consideration.

Nervous and Mental Diseases. For students and Practitioners. By Charles S. Potts, M.D., Professor of Neurology in the Medico-Chirurgical College of Philadelphia. *Third Edition*, enlarged and thoroughly revised. Small octavo; 610 pages; 141 engravings and 6 full-page plates. Philadelphia and New York: Lea and Febiger, 1913.

This book possesses every feature of a good practical manual. The diction is terse, the style didactic, and the exposition entirely free from controversy. Perusal of the work has convinced us that the book is stronger on the nervous than the psychic aspects of neurology. The vast labors of Freud and his pupils receive entirely inadequate presentation. In every other particular the book is entirely satisfactory.

Tuberculin in Diagnosis and Treatment. By Francis Marion Pottenger, A.T., M.D., LL.M.D, Medical Director of the Pottenger Sanitarium for Diseases of the Lungs and Throat, Monrovia, California. Octavo; 243 pages; 35 illustrations including one plate in colors. St. Louis: C. V. Mosby Company, 1913.

The extended use of tuberculin in recent years, especially for diagnosis, sufficiently warrants the publication of this monograph, which aims to collect the best views upon the subject. By this we do not mean to say that the work is a mere compilation. The author's experience with tuberculin is wide, and he does not hesitate to express his views with emphasis. They are on the whole orthodox. He regards the tuberculin reaction as a measure of activity, for the reason that tuberculin is a test for antibodies. If the von Pirquet test, for instance, is positive within 24 hours, the lesion is active; if positive after 24 hours, the lesion is usually quiescent. It is assuring to note that a man of Pottenger's experience has never seen harm from diagnostic injections of tuberculin. He prefers a single large dose to smaller doses. The work is written in a clear, readable style.

Another Device. By Stephen Paget. Octavo; 326 pages. London, New York and Toronto: Hodder and Stoughton. Price, $1.25 net.

Ever since the appearance of "Confessio Medici" some years ago the readers of that charming work have been avid for another book by the same author. Any apprehension that Paget would not maintain the high standard of the "Confessio" is allayed by the perusal of these essays. We find the same sensitive style, the exquisite choice of words, the idealism and the joy of living that we found in his earlier work. In addition we find that Paget has another quality which was not so apparent in "Confessio"—versatility. Paget writes upon non-medical topics equally as well as upon medical. As evidence of his versatility we find essays upon such subjects as "Latin for Girls," "The Right Sort of Girl," "Holidays," "The First Sight of Rome," Etc. Of his medical subjects we select "The Genius of Pasteur" and "Hospital Life" as specially commendable. Medical men can be proud of Paget as being one of the few doctors who have linked medicine to belles-lettres.

Progress in Surgery

A Résumé of Recent Literature.

ABSTRACTS OF SOME OF THE PAPERS READ AT THE THIRTY-FIFTH ANNUAL CONGRESS OF THE AMERICAN LARYNGOLOGICAL ASSOCIATION.

MAY 5, 6 AND 7, 1913, IN WASHINGTON, D. C.

Further Observations on Some Anatomic and Clinical Relations of the Sphenoid Sinus to the Cavernous Sinus and the Third, Fourth, Fifth, Sixth and Vidian Nerves.

In a previous communication in which the question was raised as to the etiology and treatment of migrain, Greenfield Sluder, of St. Louis, made the statement that he believed that many (but not all) of the recurrent headaches which bear the name of migrain are sphenoidal empyemata which have lost most, if not all, local signs, or which were started as such empyemata, and that the nerve trunks had become involved either by extension of the inflammation (or its toxin) through the thin wall separating the sphenoid sinus from the adjacent nerve trunks. The results obtained during the past year in a goodly number of cases strengthen his belief in the correctness of the deductions detailed in that report.

Sluder observed that the third, fourth, and three divisions of the fifth, sixth and Vidian frequently lie in close association to the sphenoid sinus, a deduction drawn from specimens which he studied by cross sections. His findings, with the exception of the Vidian nerve, were corroborated by Ladislaus Onodi. Sluder considers that if he is right in the conclusion that the mode of production of these headaches—the pathologic sequence—is the close association of the sphenoid sinus to the nerve trunks, and that the inflammatory processes are transmitted through the thin bone separating the cavity of the sphenoid from the asssociated nerve trunks, then it is necessary that such anatomic associations be formed in early life as an explanation of such headaches beginning in early life. Another year of clinical observation strengthens Sluder's belief that the pathologic process underlying these cases is a hyperplastic sphenoiditis. From an observation of 100 cases he concludes that the second division of the fifth and Vidian are the nerves most frequently involved (95 per cent). They may be involved singly, or together, then making the picture which would otherwise emanate from the sphenopalatine ganglion. It is difficult to differentiate this class of cases from sphenopalatine ganglion neuralgia; hence, one should be carefully on guard. Since the previous communication, three medicines have been tried for intrasphenoidal use. The medicines which have so far proved of greatest benefit are: One per cent carbolic acid in oil; 2 to 10 per cent oil of wintergreen and aqueous solutions of sodium salicylate, 2 to 5 per cent. These have been successful in allaying the pain long after the sinus was satisfactorily opened and the wound healed.

Results in a Series of Cases of Tonsillectomy at the Massachusetts General Hospital, Three to Four Years After Operation.

J. PAYSON CLARK, Boston: Postal cards were sent out in July, 1912, to patients who had been operated on in 1908, and 143 patients responded by presenting themselves to the clinic in person, where they were subjected to an examination and answered a set of questions with reference to the operation and after-effects. From these results the following summary is presented: The patients, with a few exceptions, were under fifteen years of age at the time of the operation. Hemorrhage after tonsillectomy calling for special treatment was of rare occurrence. The condition for which the tonsils were removed was relieved in nearly every case, even in those in which there was some tonsillar tissue remaining. An improvement of the general health was to be expected after tonsillectomy done for such cause. Children who had had tonsillectomy certainly showed no increased tendency to illness and were probably less susceptible than before the operation. The present health of these children is excellent in the majority of cases. What is apparently tonsil tissue is found much more often than supposed after tonsillectomy. The soft palate was symmetrical and the faucial pillars and tonsil fossæ normal in the great majority of the cases. The accidental cutting off of the uvula in four cases caused no bad symptoms. Most of the cases of sore throat and tonsillitis were relieved by the operation. In many cases in which there appeared to be tonsil tissue remaining, the patients were in perfect health, and in others in which there were symptoms, those were undoubtedly due in many cases to causes other than the tonsil remnants. The ordinary voice or speech may be said to be practically unaffected by tonsillectomy. No investigation was made of the singing voice. In most of the cases in which enlarged cervical glands could be felt, there was tonsil tissue present on the same side. In nearly half the cases in which there was tonsil tissue present, there were no enlarged glands. Carious teeth were apparently a direct cause of some cases of cervical adenitis.

Thytrotomy for Cancer of the Larynx, With Report of Eleven Cases.

In a paper presented to this association in 1906, D. Crosby Greene, of Boston, reported the results of an investigation of the lymphatic drainage of the larynx by means of submucous injections of methylene blue and mercury. The results obtained are confirmatory of those reported by others in showing that the network of lymphatic vessels which extends beneath the mucous membrane throughout the interior of the larynx is richer in the number and size of the vessels in the supraglottic region, relatively poorer in the subglottic portion, while on the vocal cords the vessels are very small and widely separated. These anatomic facts account for the slow growth and late development of the disease in the cervical lymph nodes in cases of epithelioma of the cords, and furnish an argument for the possibility of cure in early cases by the operation of thyrotomy and excision of the growth with a wide margin of healthy tissue. This is supported by the result of the operation in the hands of numerous operators, both in this country and abroad, so that at the present time it is almost universally recognized as the proper procedure for the treatment of early intrinsic cancer of the larynx. Certain details of the technic have an important bearing on the immediate and after-results of the operation. The steps of the operation are: 1. Ether by inhalation, preceded an hour before by ¼ grain of morphin and 1/150 grain of atropin. 2. With head slightly extended a median incision is made, extending from the lower border of the hyoid bone to the lower border of the cricoid cartilage. This incision is carried down through the prethyroid muscles until the thyroid and cricoid cartilages and cricothyroid membrane have been definitely exposed. 3. A one per cent solution of cocain is injected through the cricothyroid membrane into the cavity of the larynx. 4. The patient is now placed in the Trendelenburg position and a thick pad placed under the shoulders to bring the larynx into prominence. 5. The cricothyroid membrane is next incised in the median line, and through this incision a swab of ten per cent solution of cocain is introduced and applied to the laryngeal mucous membrane. 6. The thyroid cartilage, after a pause of five minutes, is divided from below upwards. In young subjects this may be done with a knife, but in the majority of cases where the cartilage has become ossified, it is best to use strong curved scissors with dull points. 7. The thyroid wings are now widely retracted and an examination of the growth made under good illumination. 8. Beginning at the free margin of the thyroid cartilage, on the affected side in front of the growth, the internal perichondrium is elevated from off the cartilage with a sharp elevator from before backwards to a line well behind the limits of the growth as well as above and below it. All the soft structures are thus freed from the underlying cartilage. 9. Parallel horizontal incisions are now made with scissors above and below the growth. These incisions are carried about one-half inch back of the posterior limit of the growth. 10. The growth with its surrounding tissue is now entirely removed with a wire snare by which the posterior attachments are severed. Much depends on the

proper selection of cases. When the growth is so extensive even though confined within the cavity of the larynx, that the larynx cannot be opened without cutting into the growth, recurrence is not only possible but probable.

Primary Carcinoma of the Epiglottis, With Report of a Case.

EMIL MAYER, New York: Primary cancer of the epiglottis is a rare disease, and up to the present time the treatment has consisted of surgical intervention or the use of radium and the *x*-ray. Mayer had two cases of cancer of the epiglottis. The first case was diagnosed as probable malignant disease of the epiglottis, and the subsequent history was that of primary epithelioma of the larynx with subsequent metastatis, laryngectomy, and death. The second case was that of a man, 64 years of age, who complained of some slight difficulty in swallowing, especially the swallowing of cold liquids. His general condition was good. Examination showed some edema of the uvula, and numerous small white spots on the tongue and inner surface of the cheek. The condition was diagnosed as leukoplakia buccalis. He gave no history of lues. After treatment he improved somewhat, but this did not last, and some six or seven months later there was discomfort in swallowing, a nasopharyngeal catarrh, and the white patches still present. There were no other evidences of a diseased condition in the throat. About three weeks later a new condition presented itself on the laryngeal surface of the epiglottis. There was a deep ulceration surrounded by a thickened mass. The pathologist pronounced this cylindrical-celled carcinoma. This, then, was a case of carcinoma of the epiglottis in its earliest stages. The epiglottis was removed, after the patient had been anesthetized and the suspension laryngoscope placed in position. There was little bleeding at the time of the operation, but twenty-six hours after the patient began to expectorate large quantities of blood. This bleeding was checked by the application of ice internally and by sprays of peroxid of hydrogen. He left the hospital in ten days. This was the first operation of its kind ever performed under the ingenious suspension laryngoscope of Killian.

Observations on the Recognition of the Virus During the Later Periods of Syphilis: Two Successful Inoculations of Rabbits Directly From the Blood of General Paretics. W. W. GRAVES, St. Louis. *Interstate Medical Journal*, June, 1913.

This short article deals with a large number of cases investigated by Graves. In a study of five hundred specimens of blood and cerebro-spinal fluid, by means of stains and dark field illumination, spirochetes were found in only three instances. More than two hundred bloods and spinal fluids of syphilitics were incubated in specially-devised ampoules, but in no case were spirochetes found. One hundred and thirty syphilitic bloods were next examined by inoculation in Noguchi culture media and two positive results have been obtained, one in a case which had been infected twenty-three years before. Finally the blood from five paretics was injected into the testicles of rabbits and in two cases orchitis with typical spirochetes developed. The patients in these two instances had received their initial lesions, respectively fourteen and seventeen years ago. "Certainly the modern laboratory aids and clinical refinements now utilized in the recognition of the syphilitic justify the assumption of many older and modern investigators that somewhere in the tissues of infected individuals the contagium vivum exists."

The Passage of Ureteral Stones After Intra-Ureteral Manipulations. J. L. RANSOHOFF, Cincinnati. *The Lancet Clinic*, May 17, 1913.

Ransohoff cites two cases in which ureteral stones were present and were causing symptoms. In one case the passage of a ureteral catheter and the injection of oil and in the other case simple manipulation through a cystoscope caused the passage of the stones into the bladder and their subsequent passage through the urethra. The author advocates that in view of the gravity of operative removal of stones in the lower end of the ureter, the more conservative methods above alluded to, should be given a trial.

The Simulation by Malaria of Acute Surgical Abdominal Disease, Especially Appendicitis. WALTER M. BRICKNER, New York. *The Archives of Diagnosis*, April, 1913.

It is not generally known that a malarial seizure may be marked by sharp, localized abdominal signs and symptoms quite like those of appendicitis. The occasional occurrence of these abdominal manifestations in malaria is recognized in very few of the text-books and monographs dealing with the disease, and in the standard works on appendicitis the sections on differential diagnosis contain no reference to malaria.

Brickner reports three cases referred to him by competent physicians for immediate operation for appendicitis, in all three of which he refused to operate and made a diagnosis of malaria, which was confirmed by the finding of plasmodia and the disappearance of the symptoms under quinine administration. Why a malarial seizure should provoke pain and tenderness (and sometimes even rigidity) in the right iliac region is not at all clear; but that it does occasionally do so makes it necessary to consider malaria, as well as pneumonia, among the extra-abdominal diseases that may cause the signs and symptoms of appendicitis.

Brickner compares the clinical pictures of appendicitis and gall-bladder disease, with that of malaria with simulating abdominal symptoms, and shows that "if we exclude the finding of plasmodia—which, indeed, one is not apt to discover unless other signs or symptoms suggest a patient search for them—there is not a single differentiating feature that can here replace the clinical sense, the 'sizing-up' of a case in the light of experience, or, to be somewhat more specific, the study of the facial expression and the 'abdominal expression,' and the balancing of physical signs with subjective symptoms and the anamnestic data." It is generally believed that a high leucocyte count, except at the outset of the disease, contradicts a diagnosis of malaria; yet in the two of Brickner's cases in which the blood cells were counted there were 20,000 and 18,000 leucocytes, with 86 per cent and 76 per cent polynuclears, respectively. In the first of these no plasmodia were found at first. Nor can enlargement of the spleen be depended upon by itself. If found, it may be due to an old malaria or other cause. In one of Brickner's cases, the spleen was just palpable, and in another it was not palpably enlarged at any time throughout the attack.

Three Types of Occlusion of the Esophagus in Early Life. THOS. M. ROTCH, Boston. *American Journal of Diseases of Children*, July, 1913.

In a short article accompanied by a number of very beautiful radiographs, Rotch describes three cases of esophageal stricture in children. The first case was that of a child two years of age suffering from an extreme congenital stenosis, for which gastrostomy was done,—but without being able to save the child's life. The second case in a girl aged 10 years represents a type in which there is narrowing of the esophagus on the border line between a local organic condition and one of central spasmodic origin. It is exceedingly favorable for treatment. The third case is one of pure spasm complicated by a foreign body which was removed through the esophagoscope.

The author believes that there are two classes of esophageal narrowing irrespective of those of traumatic origin. Both classes will probably be found to be of congenital origin. One of them, however, is a localized organic condition in the walls of the esophagus, while the other is a functional, with possibly an additional organic, congenital condition of a brain center, which is represented by a lack of inhibition.

Puncture of the Corpus Callosum. EDWARD ARCHIBALD, Montreal. *The Canadian Medical Association Journal*, June, 1913.

Archibald discusses the recently advised puncture of the corpus callosum for cases of increased intraventricular pressure, and then describes four cases of his own, two of obstructive hydrocephalus in infants and two of unlocalized

brain tumors in adults. The author thinks that callosal puncture gives promise of being a satisfactory operation for decompression in many cases of tumor, especially in the presence of a complicating hydrocephalus. It is, however, not easier to do than the subtemporal operation, unless one is content to go at it somewhat blindly, as Von Bramann recommends, through a small opening, and run the chance of breaking large cortical veins or the lacunal outside the longitudinal sinus. In obstructive hydrocephalus of high grade in the infant, callosal puncture proved temporarily of slight benefit, but ultimately failed to relieve the condition.

The Surgical Treatment of Pendulous Abdomen. JAMES MCKENTY, *The Canadian Medical Association Journal,* May, 1913.

From a study of the literature and from a consideration of two cases here reported, the author comes to the follow conclusions regarding pendulous abdomen operations:

There are two main indications, first, to bring the rectus muscles together, and secondly, to correct the vertical elongation of the aponeurosis. The double-breasted coat operation, supplemented by a transverse incision with overlapping in the vertical direction, effectively meets these indications. The Webster operation is suitable for mild degrees of relaxation only. The practice of some surgeons of mobilizing the rectus muscles, drawing them out of their sheaths, and suturing them together in the median line, does not seem well considered, as it disturbs their nerve and vascular supply. A much stronger wall is formed by duplication of the aponeurosis. In cases associated with much subcutaneous fat, the transverse skin incision is preferable, as it permits free excision of the fat in the flanks, where it is most abundant.

Relation of Gas Embolism to the Production of Artificial Pneumothorax. STEVENS T. HARRIS, Highlands, N. C. *Southern Medical Journal,* May, 1913.

Harris states that now that the production of artificial pneumothorax is so common a procedure, the symptoms of gas embolism should be better understood and appreciated. About 1 per cent of the deaths occurring during the operation are due to embolism and it is of great importance to take note of the very first premonitory symptoms in order to avert a catastrophe. Gas may be forced directly into a vessel, or it may be sucked into the circulation through the aspiratory power of the expanding lung. Embolism may also be produced by simply allowing the outside air to enter through the needle by withdrawing the wire, without attaching the gas apparatus. The author gives the details of a number of cases which permit him to draw the following deductions: A thickened pleura and adhesions are signals for careful work. A cavity or brouchus cannot be injected without an element of danger. A fine needle should not be used except after the formation of a positive pleural cavity, as such a needle is more likely to lie in the lumen of a bloodvessel. When the pressure gauge shows a comparatively slight negative pressure rise with each inspiration and no appreciable reaction from each succeeding expiration, gas embolism is imminent. No gas must be introduced until one is sure that the needle point is in the space between the pleural layers. The slightest feeling of numbness, tingling, queerness, dizziness or blindness on the part of the patient are the usual premonitory signs of embolism.

The New Radium and Thorium Therapy. FRANK H. BLACKMARR, Chicago, *The Medical Times,* May, 1913.

In a short article, Blackmarr calls attention to the therapeutic uses to which radioactive substances may be put. He describes the methods in use in Vienna, especially in Professor Falta's clinic, where careful studies of the emanation treatment have been made. The emanatorium is an air-tight room with double doors. The patients are placed in this room. Apparatus is used to remove the carbonic oxide eliminated by the patient, as well as organic matter and ammonia. Moisture and temperature are also controlled. Knowing the capacity of the room and the quantity of oxygen absorbed by each patient, it is a simple matter to supply the correct quantity of oxygen per capita of those sitting in the emanatorium. In pouring the oxygen into the room, the emanation is carried in with it from the radium solution. The dosage or strength of the emanation in degrees is designated by what are called Mache units—each one of which represents one one-thousandth of an electro-static unit. The patients remain in this room from one to four hours.

The majority of the patients so treated react, i. e., their condition becomes temporarily worse, but this is soon followed by improvement. The author refers in detail especially to cases of anemia and leukemia in which excellent results are said to follow this treatment.

Gastric Motility in Infants as Shown by the Röentgen Ray. MAYNARD LADD, Boston, *American Journal of Diseases of Children,* May, 1913.

Ladd reports on twenty-four series of *x*-ray pictures taken of the gastro-intestinal tracts of infants who had received bismuth in various different milk mixtures. The method of procedure was the following: The baby was given two rounded teaspoonsful of the subcarbonate of bismuth in about one ounce of milk mixture. This was given through a stomach tube and was followed by an ounce of milk to wash this down. The tube was then removed and the infant took the remainder of the feeding from a bottle. Plates were then made about every half hour to one hour and the various stages of gastric motility were studied from these.

One of the most striking things observed was the curious lack of peristalsis to be seen in infants' stomachs as compared with adults. Only twice could the duodenum be outlined clearly. In a case of normal digestion, if the plate is clear-cut, bismuth appears in the small intestines as soon as the feeding is completed, showing that a considerable amount of food passes into the duodenum without undergoing gastric digestion. The stomach appears to empty itself of the greater part of its contents in from one and one-half to two and one-half hours, the emptying process being more rapid in some cases than in others. After the greater part of the stomach contents has passed into the small intestines, a considerable residue remains, which is emptied very slowly, often remaining for four and one-half to five or even seven and one-half hours, in both breast and bottle-fed babies. When a bismuth feeding is given and another feeding follows at the end of the regular two and one-half hour intervals, the bismuth residue from the first feeding does not appear to mix intimately with the new feeding, but, as a rule, passes out into the small intestines much more quickly than it does when left to itself. The suggestion is strong that the distention of the stomach by a new feeding, if not excessive, stimulates peristalsis and favors the expulsion of the bismuth residue into the duodenum. On the other hand, if the distention is excessive, peristalsis may be inhibited and the emptying time of the stomach delayed. In congenital pyloric stenosis the dilatation and peristalsis are marked, the pyloric end showing the same prow-like formation seen in adults. After a posterior gastro-enterostomy the stomach appears to expel its contents through the artificial opening quite as rapidly, if not more so, than in the normal stomach.

The Diagnosis of Hemorrhoids and Rectal Palpation. (*Le Diagnostic des Hémorroides et le Toucher Rectal*). ANSELME SCHWARTZ, Paris. *Paris Medical,* May 31, 1913.

By citing a number of interesting cases, Schwartz shows how necessary simple rectal palpation is in the diagnosis of rectal bleeding. In the presence of any illness in which there is a loss of blood from the rectum, it is the duty of the examining physician to palpate and to inspect by aid of the proctoscope, the interior of the lower bowel. If this is done in every case, mistakes such as are described in this paper will not occur. Several cases are reported where external hemorrhoids were to be removed for bleeding, when it was found by rectal palpation that they were but secondary to large inoperable rectal new-growths.